Why we SLEEP AND DREAM

POWERFUL SECRETS OF BETTER HEALTH

CHANDLER ROSS

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We are such stuff as dreams are made on; and our little life is rounded with a sleep.

— William Shakespeare

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INTRODUCTION

Congratulations on downloading *Why We Sleep and Dream: Powerful Secrets of Better Health* and thank you for doing so.

Sleep has been a mystery that scientists and researchers are continually studying to answer questions about its mysteries. The questions of why we sleep, what happens when we sleep, and what effects light, surroundings, illness, and medications have on our sleep have been studied and theorized for years.

Sleep is something that, for most of us, is healthful and leaves us refreshed and ready for the new day. But for some, sleep is elusive. Illness, sleep disorders, medications, and even their surroundings do not enhance their ability to sleep in peace and derive the benefits to their health that a good night's sleep provides.

Why We Sleep and Dream will explore the mysteries of why we sleep, the things that affect our sleep, how we can review our bedtime surroundings and eliminate irritants and substances that interfere with our sleep. Reading this book will help to understand how sleep is as important to our health as air, food, and water to survive and live well.

There is so much more to learn about sleep, but you'll have to read the book to find out what it can do and how we can get the best night's sleep.

There are plenty of books on this subject on the market, so thanks again for choosing this one! Every effort was made to ensure it is full of as much useful information as possible. Please enjoy!

1

WHAT IS SLEEP AND WHY DO WE SLEEP?

What is Sleep?

Sleep. We love it, crave it, hug our pillows and hit the snooze button when the morning alarm goes off, and we probably feel that we don't get enough of it. But the need for sleep is crucial for every part of our body. Our brain, lungs, heart, the role of the immune system, mood, metabolism, and the ability to resist disease all rely on our ability to sleep. It is as critical to our survival as food or water. (National Institute of Health, 2018)

We all need sleep, but why it's needed is a mystery. What is known is that without sufficient sleep, our brain can't shape the paths in the brain that allows learning and memory creation. Concentration and having a quick response to immediate situations are harder to achieve without sufficient sleep.

The neurons (nerve cells) that communicate with one another need to have sleep to function. Surprisingly, the brain and body remain incredibly active during your sleep. Sleep is like a housekeeper that eliminates the toxins in the brain that tend to build up during your waking hours. So, when you do get a good night's

sleep and feel refreshed, you know that your sleep did its house-cleaning job.

(National Institute of Health, 2018)

The lack of sleep, and if it is a chronic condition of your life, can elevate the danger of developing cardiovascular disease, high blood pressure, depression, obesity, and diabetes. In today's busy world, it is very possible that, as you're reading this, you feel that you fall into the category of those who don't get sufficient, restful sleep. (National Institute of Health, 2018)

People have thought that sleep is just our lives' passive part until the 50s. Over the last almost seventy years, it's been discovered that the brain is extremely active while we sleep. Additionally, our daily functions and mental health are affected by sleep, or the lack of it and understanding the effects are just being understood. (American Sleep Association, 2018)

The computer of our body, the brain, has a structure called the hypothalamus that is the size of a peanut embedded well into the brain. It contains nerve cells that operate as control centers that affect sleep and awakening. Groups of thousands of cells known as the suprachiasmatic nucleus (SCN) are found within the hypothalamus and receive the information about exposure to light directly from the eyes and how your behavior rhythm is controlled. (National Institute of Health, 2018)

The brainstem, located at the base of the brain, contains neurons that links the brain to the spinal cord. This connection produces the neurotransmitters of norepinephrine and serotonin that keeps parts of the brain operating while we're awake. In the brain, neurons start to turn off those signals that function to keep us awake and start to signal the brain when we fall asleep. We begin to feel drowsy when there is the build-up of a chemical called

adenosine in the blood. Once we're asleep, this chemical slowly breaks down during our sleep. (American Sleep Association, 2018)

After this explanation, it appears that sleep is a complex and active process affecting the way we function and that research and scientists are just now understanding.

Why We Sleep

The very basic reason we need sleep is that we won't survive without it. It is the way our body and mind refreshes and recharges. If a human stays awake for 11 consecutive days, it will cause death. Even sleep that is irregular becomes an issue. A really good night's sleep can relieve being sleepy and being deprived of that sleep which leaves us with an out of sync, groggy feeling. (Tomorrow Team, 2018)

Two-thirds of our life is spent sleeping. Without it, it could lead to psychosis and ultimately kill us. The body needs sleep to function properly. We need to sleep as much as we need food for sustenance and survival. (Pappas, 2017)

We think that when we sleep that the body shuts down, as well as our mind. Nothing could be farther from the truth. Sleep is a period of activity when an important process of rejuvenation, renewal, restoration, and reinforcement occurs. (Sleep Foundation, 2019)

When we are asleep, we are defenseless and exposed. Yet, it must be worth our being in a state of risk and unconscious-like state for the brain to pretty much go offline. (Sleep Foundation, 2019)

It's really not too hard to prove that it is essential to sleep. Research has shown that rats die within two to three weeks of being deprived of sleep. Additionally, humans who are in good health and who were deprived of sleep for 24 hours developed

symptoms of schizophrenia and also suffered hallucinations. (Pappas, 2017)

It is difficult to get a firm handle on the reasons why we sleep because trying to study sleep is challenging. For example, the study of denying an animal of sleep interrupts a number of its biological systems. The outcome can give a mixed result as to whether this occurrence is because of denying the animal sleep or because the animal became stressed because of the sleep deprivation and that led to the disruption of its systems. (Pappas, 2017)

Theories on Why We Sleep

There have been many theories developed over time by scientists that have continued to evolve each time a new discovery is made. We, as laymen, not scientists, know why we sleep — we get tired. Our body is depleted of energy and we need sleep to rejuvenate.

The exploration by scientists trying to answer the question of why we sleep have had numerous approaches and still no concrete answers. There have been studies to find what the sleep patterns various organisms have to ascertain whether there are sleep functions that are similar or different between species that could uncover, to some degree, anything about sleep's functions.

Most mammals sleep like humans, but the armadillo and opossums sleep 18 hours a day, while giraffes and horses get by on less than 3 hours a day. Needless to say, these are broad ranges when trying to compare the number of hours humans sleep versus other mammals.

However, scientists have developed numerous theories about why we sleep. The adaptive, also known as the evolutionary theory is one of the earliest theories about why we sleep.

The theory proposes idleness and inactivity at night is a version

that sleep was a function of survival. Sleeping was a way of saving organisms and keeping them away from any harm that could happen, specifically when they were most vulnerable. This theory puts forward the idea that animals who remained quiet and still through the vulnerable times had a better advantage above animals who stayed active. The animals didn't experience accidents and predators didn't kill them. This behavioral approach probably developed and turned into what we now acknowledge as sleep. (Harvard.edu, 2007)

This theory can be countered by the reasoning that it's better to remain awake to be able to respond to an emergency. So, being asleep and unconscious does not present an advantage if the principal reason is to remain safe.

Another theory, one of energy conservation proposes that the main reason for sleep is to diminish a person's demand for energy and spending through a portion of the day or night, particularly at those times when it's the least effective to go out and search for food.

Energy metabolism is considerably decreased during sleep. Human's metabolism is diminished by almost 10%, and in other species, it is reduced considerably more. The body temperature and any caloric need are reduced during sleep. This supports the suggestion that one of the main reasons for sleep is to aid organisms to preserve their resources of energy. The belief in this theory is that it is, in part, associated with the inactivity theory held by many scientists.

A third theory is an idea that sleep assists in restoring what we lose in our bodies while we're awake. Sleep provides the body with the chance to rejuvenate and repair. These ideas have gotten an endorsement from the substantiation of evidence gathered in the studies of human and animal sleeping habits. The most notable of

evidence collected in these studies is if the animals are denied of sleep entirely, they lose all of their immune function in a few weeks and die. It was found that this was additionally supported by the discovery that several functions that are restored in the body, such as growth hormone release, protein synthesis, muscle growth, and tissue repair happen mainly or sometimes only during sleep. (Harvard.edu, 2007)

There are other characteristics of sleep that are distinctly specific to cognitive function and the brain and the process of rejuvenation. An example of this is during our waking hours; the neurons in the brain generate adenosine, which is a secondary result of cell activities. Adenosine building up in the brain is believed to be one of the reasons that make us think we're tired. What is known to scientists as the "drive to sleep" is caused by the adenosine build-up while we are awake. While we continue to be awake, the accumulation of adenosine remains at a high level. When we sleep, the body is then given the opportunity to clear adenosine from our system. This is why when we awaken we feel more alert.

(Harvard.edu, 2007)

The brain plasticity theory is a more recent explanation as to why we sleep. It is based in connection to the changes of configuration and the reorganization of the brain. This is known as brain plasticity, which is not fully understood. However, its link to sleep has numerous crucial implications. It has been noted that sleep is an important role in brain development's progression in young children and infants. Over the course of a day, infants are likely to sleep between 13-14 hours, half of which is in REM sleep, where dreams occur. The connection of brain plasticity is also being observed in adults where the lack of sleep has a connection with their learning abilities and performing various tasks.

(Harvard.edu, 2007)

What do We Actually Know About Sleep

Research has found that sleep appears to be largely targeted to the brain. Even though the immune system and hormone levels are affected by sleep deprivation, the impact that is most consistent in animal studies is in the brain. (Pappas, 2017)

There is evidence that the central nervous system is continually impacted by sleep. Evolution may have added things to the main function of sleep, but the key function of sleep has to do with the brain. (Pappas, 2017)

It has been shown that sleep is when neurons join together in networks. Neuron networks that have been grown in labs show stages that are similar to sleeping and waking. It could mean that sleep naturally results when neurons start to work jointly. (Pappas, 2017)

Another essential role that sleep plays is to consolidate memories. During our waking hours, our brains absorb an amazing amount of information. This information is not recorded and logged directly, but the experiences and facts that we have been exposed to have to first be stored and processed; much of this occurs when we sleep. During sleep, the process of consolidation takes place and transfers the information received over the course of the day from the short-term memory to the more durable long-term memory. People retain information and execute memory tasks better after a night's sleep. (Sleep Foundation, 2019)

How Animals Sleep

Like humans, sleep helps animals strengthen memories and learn. Animals who have larger brains need more REM sleep.

Over time, the sleep patterns in animals have changed. As stated earlier in the chapter about the idea of sleep and animals

protecting themselves, they have created ways to sleep and protect themselves. As an example, otters hold hands while sleeping, or entwine themselves in sea wood, thereby protecting their babies and remaining afloat while they sleep. In the same way, sheep and cows sleep in a herd — a way of protecting themselves by practicing safety in numbers.

Animals sleep depends on the amount of food they eat. Animals whose diets consist of lower caloric bulk tend to sleep less. For example, as mentioned earlier, giraffes and other animals that graze, like elephants, sleep between 30 minutes to only 2-4 hours a day. Although considered a grazing animal, elephants spend 18 hours a day consuming an amount of food that's up to 600 pounds.

There are exceptions to rules, and the koala is one that sleeps almost 15 hours a day, even though they have a very low-calorie diet of eucalyptus which doesn't afford them a lot of energy.

Carnivores, meat-eating animals, tend to sleep longer. However, lions usually sleep for short periods day and night, so they are able to grab food as it becomes obtainable.

Previously in this chapter, it was noted that the armadillo wins the most amount in the sleeping contest. This is followed by the pocket mouse sleeping for 20.1 hours. The python, owl monkey, and brown bat all sleep between 17 and 20 hours.

So, how does Hibernation Work?

Surely, there are those of us who only think that bears hibernate and only wake up in the spring. Well, that's not quite right. In the winter, they do hibernate for an extended period and don't eat, defecate, or urinate. However, they do give birth while they hibernate by waking up and then return to hibernation and nursing their cubs.

Mammals and Sleep

Mammals sleep and have the same sleep patterns of REM sleep, deep sleep, and light sleep. A sleep's length ranges from 18 hours to 3 hours per day and adult humans' length of sleep ranges between 7-7.5 hours per night.

Mammals that sleep a number of times a day sleeps in a manner known as polyphasic, while humans and primates sleep uniphasically which means that sleep is focused in one period per day.

Marine Mammals and Sleep

Unihemispheric sleep gives some marine life — dolphins, orcas, porpoises, and seals — the ability to sleep using one brain hemisphere at a time. The animal continues to move, get air at night, and see through one eye with the other hemispheres that is awake. Amazingly, studies of dolphins have shown that they are able to achieve multifaceted tasks while in unihemispheric sleep.

Birds and Sleep

Migratory birds such as swifts, seabirds, sandpipers, and songbirds sleep as marine mammals do, unihemispherically. This helps them continue to fly continuously. The periods of migration are different depending on the species, but they can be months long.

Scientists have studied and can identify what sleep is and how it affects us in different ways. They know that sleep deprivation is destructive and actually kill if carried out to the extreme over a period of days. They have published studies as to various theories that have evolved over time as more research has discovered the astounding transformations that take place in our bodies when we sleep.

Scientists are still studying the effects of sleep and admittedly, are still exploring all the benefits that the human body derives from

getting sufficient sleep, and the dangers of what sleep deprivation can do and the sleep impairments and diseases that can be affected. What scientists know is that sleep means survival for everyone, whether human or in the animal world.

We'll cover many aspects of sleep in the following chapters that will be informative and surprising. Meanwhile, get a good night's rest.

2

THINGS THAT AFFECT OUR SLEEP – BLUE LIGHT, CAFFEINE, EXERCISE, EXTERNAL NOISES

Our sleep can be affected by a number of things. A welcoming bed, lights turned off, and quiet surroundings all help our brain to calm down, the body to relax, and finally, the ability to drift off into the blissfulness of sleep.

However, there are other things that affect our sleep. They can disturb and interrupt our ability to achieve what is supposed to be the natural process of falling asleep. We'll explore what these disturbances are and what can be done to eliminate them to get a good night's sleep.

What we eat and drink, if we exercise too close to our bedtime, work past what would be our normal business hours, the external noises of traffic, sirens, garbage trucks, and people chatter all play a part in what can affect our sleep, and not necessarily for the better.

Additionally, we can add on another element that, at one time, did not exist to create a sleep disturbance. It is the "blue light" that our electronic devices emit. And when left on and too close to the place where we sleep, can keep our body temperature elevated

and prevent the right amount of melatonin from being produced by the body.

The Blue Light Effect

Having your phone or computer on in your bedroom is a problem when it comes time to sleep. The connection of blue light and sleep patterns didn't exist until led lighting, computers, and cell phones became part of our lives.

Research has found that being exposed to blue stifles the production of melatonin far more than any other light. The shorter wavelengths emitted by blue light can affect the production of melatonin because there is more sensitivity of the body from this type of light. (Bradford, 2016)

Blue light is environmentally friendly, but its effect on your sleep can be hazardous and possibly cause disease. Prior to artificial light, sunlight was the major source of light during the day, and people pretty much spent the night in darkness, with the exception of candlelight. However, we now take that for granted since artificial light is easily accessible.

The problem is that our body's biological clock, known as the circadian rhythm, is thrown totally out of whack. Not all artificial light colors have the same effect as blue light. Although it is a good light to have during the hours of daylight to increase our attention, mood, and reaction times, it is most disturbing at night. The onslaught of the screens of our electronic devices – LED TV screens, computer and laptop screens, and our mobile phones, as well the lighting that is energy efficient – increases the exposure that we received to blue wavelengths, particularly after the sun goes down. (Harvard Health, 2018)

Dim light can also disturb a person's melatonin production and circadian rhythm. The reason people don't get the amount of sleep

they need is that of the light at night. Abbreviated sleeping can increase the risk of cardiovascular problems, diabetes, and depression. (Harvard Health, 2018)

A research experiment was done which compares the effects of being exposed to blue light for six and a half hours versus green light that was similar in brightness. The suppression of the production of melatonin lasted twice as long when exposed to the blue light and moved the circadian rhythms twice as much from 1.5 hours to 3 hours. Any kind of light can suppress the production of melatonin, but at night, the blue light does so more powerfully than others. People who work shift hours could possibly protect their eyes by using orange-tinted sunglasses to block out blue light. (Harvard Health, 2018)

How to Protect Your Eyes from Blue Light

- If you use night lights, use a red light. The shift of the circadian rhythm and melatonin suppression are affected the least by the color red.
- Don't look at bright screens two to three hours prior to bedtime
- Bright light exposure during the day will increase the ability to sleep at night, elevate your mood, and make you more alert during the day.
- If you are a night-shift worker or are exposed to electronic devices at night, give some thought to purchasing blue-blocking glasses or getting an app that can filter the blue/green light at night. (Harvard Health, 2018)
- And if light from an outside street lamp is peeping through the window blinds, purchase a sleeping mask to totally block out the light.

Are you drinking too much caffeine?

Caffeine is the most obvious of ways we disturb the natural physical process of our falling asleep.

Caffeine is a stimulant that is considered the same type of drug as cocaine and methadone and affects the central nervous system. It is considered a psychoactive drug that rushes messages traveling between our brain and the body. It is the most commonly and widely used drug. The fact that it is contained in so many foods and drinks make it very easy to forget that it is a drug. (Alcohol and Drug Foundation, 2018) (Hartney, 2018)

Drugs that are stimulants act in part by speeding up our breathing and heartbeat, the same way our body acts in a "fight or flight response." Muscle tension is increased as well. Consuming exorbitant quantities can create a range of side effects such as a headache to having a caffeine overdose. (Hartney, 2018)

The seeds, leaves of various plants and nuts that caffeine is found in are:

- Coffea Arabica – is used for coffee
- Cola – utilized as a nut and found in tea or soft drinks
- Thea sinensis — is used in tea
- Paulina cupana — guarana in energy drinks and snack bars
- Theobroma cacao — is us in chocolate and cocoa

Caffeine is used in numerous products. Coffee and tea are the most commonly known products that caffeine is found. Other products include Red Bull, Coca-Cola, and chocolate. The quantity of caffeine in these products can differ, so checking the label will give you how many milligrams can be found in each. (Alcohol and Drug Foundation, 2018)

How Caffeine Affects Sleep

People may not realize how much caffeine they consume over the course of a day. They begin the day with a morning cup of coffee right after awakening and may consume another cup during the day to keep alert.

What they may not realize is that, in addition to the two cups of coffee they've consumed, they may have a soft drink or two with their lunch, like a Coke or Pepsi. Then they may feel the need to have what they think is a relaxing cup of hot cocoa in the evening if the weather is cold. Add all the caffeine found in these beverages and you've added quite a bit of chemical that will block our ability to fall asleep, and actually keep us alert and awake.

Actually, there isn't really a need to include caffeine in your diet. If you are moderately in-taking caffeine via coffee, tea, soft drinks, or other beverages or foods that contain caffeine, then it is not considered a recognized health risk.

A daily intake of 250 mg of caffeine that is the equivalent of three 8-ounce cups of coffee is what is considered moderate. Imbibing six cups or more of the same amount of coffee each day is believed to be excessive. (National Sleep Foundation, 2019)

Caffeine can create stimulation in as little as 15 minutes once it is consumed and enters the bloodstream, through to the stomach and small intestine. It will remain in the body for several hours and will take approximately 6 hours to eliminate half of what has been consumed.

So, if you haven't had an initial cup of coffee in the morning or a soft drink beverage at lunch and drink an 8-ounce cup of coffee in the afternoon, around

3 pm, you'll consume approximately 10.5 mg of caffeine. It will take about 6 hours, until 9 pm of the same evening for half the amount of caffeine to be eliminated from your system. However, at dinner

which you ate at about 7 pm, you consumed a soft drink that contains about 9.7 mg of caffeine. In doing so, you've added to the 5.25 mg of caffeine left from the 3 pm coffee. There will be about 14.95 mg remaining in your system at 9 pm, of which half will be eliminated somewhere around 3 am the next morning. Thus, it is really important to become aware of how much caffeine you are drinking on a daily basis and the amount of time it takes to rid the body of its effects before bedtime.

The idea that caffeine can create physical dependency is supported by a number of studies. One way you can test if you are dependent on caffeine is to cut back the amount you've been normally taking and see if you suffer from signs of withdrawal like fatigue, headache, and muscle pain. (National Sleep Foundation, 2019)

In moderate doses, caffeine will increase alertness, cause headaches, dizziness, nervousness, insomnia, and diminish fine motor coordination. Other symptoms and conditions are considered likely to happen if caffeine is consumed in large amounts such as sleep disruption, anxiety, rapid heartbeat, excessive urination, and irritability. It can also create what's known as a "caffeine crash" when all the effects of caffeine wear off that can result in a migraine.

How to Get a Better Night's Sleep

Caffeine, when found to be in excess of what is considered a moderate amount, can disturb the pattern by which we naturally fall asleep because it keeps our mind to be alert and awake. Without the body's ability to go through the natural process that allows us to fall asleep, we can become sleep-deprived. The lack of sleep can be extremely detrimental on a long-term basis.

Now that you've read how caffeine can affect you in getting a

healthy and restful night's sleep, these are the things you can do to achieve that goal:

- Go to bed and wake up at a regular time every day, even on the weekends.
- Develop a routine before bed to relax you like listening to music, taking a bath, drinking milk (an amino acid, tryptophan, is contained in milk which induces sleep).
- Your sleep setting and environment are extremely important. A dark, comfortable, cool, and quiet atmosphere is the best.
- A comfortable mattress and pillow are essential. Lumpy won't do.
- The bedroom should be for two things: sleep and sex. Having a television in the room is distracting, noisy, and can emit blue light.
- Don't have anything that contains caffeine near bedtime. Coffee, soft drinks, tea, and chocolate are a no-no, (yes, chocolate too). This will affect the ability of the natural sleep process to occur.
- Don't eat 2-3 hours prior to bedtime. This is huge because the one thing you don't want to do is get up in the middle of the night and have an upset stomach that can keep you up until daylight.
- Smoking – quit if you can. Smoking lends itself to poor sleep and it's quite a risk to your health.
- Alcohol should be avoided before bedtime as well. It can lead to disturbed sleep during the night.
- Exercise is great, but not close to bedtime. (More on how it affects your body and sleep later in the chapter).

Noise, All Different Kinds That Can Affect Your Sleep

Noise. We're surrounded by it all day long. Traffic noise, airplanes flying overhead, people talking, television, or radio noise (sometimes, not just ours if you live in an apartment building and share walls with other tenants).

Actually, during the day, it's something we become accustomed to because it's all part of our environment. But, the one time we don't want to have any noise disturb us is when we sleep. Unfortunately, it is not always possible to find a quiet environment for sleep. So how does noise disturb our sleep?

Noise can stop our initial attempt to fall asleep and sounds in the night can wake us up and prevent us from getting back to sleep. It tends to be the most disturbing and disruptive when we're in the light states of sleep that start at the beginning of the sleep cycle and reoccurs over the course of the night. (Perry, Leah, 2017)

The possibility of noise can disrupt our sleep and wake us from REM and deep sleep. It's important to get the sleep that's needed by protecting the sleep environment from any unwanted noise during the night. There are noises that won't awaken us but will have a disturbing effect on the quality of sleep we get. Although we are asleep, the brain continues to process noise.

The research proposes that particular brain patterns of activity are connected to tolerance for noise during sleep that is higher. Greater resistance to noise found in the brain produces higher intensities of sleep spindles. Sleep spindles are surges of high-frequency brain waves and happen in Stage 2 of sleep that is a part of light sleep that comprises almost half of a night's rest. (Perry, Leah, 2017)

Sounds that are familiar and that are part of your life will be less disturbing to your sleep. New or unusual sounds are the noises that tend to be more disruptive to your sleep. Habituation is the

process of acclimating to sound. It happens at night as well as during the day. Noises to which people in cities fall asleep, traffic, horn blowing, early morning garbage truck pickups, ambulance, and police sirens, will keep someone living in rural settings wide awake. Danger sounds, like the opening of a door that shouldn't be opening, will awaken you from sleep. The sound of your child crying will definitely wake you up almost instantly. (Perry, Leah, 2017)

Soundproof Your Sleep

- Make any adjustments needed to eliminate any sound that interferes with you from having a wonderful sleep during the night.
- You can shield your windows with curtains to muffle external street noises and use floor coverings and carpeting on your floors. Keeping your windows closed can help to limit outside noise as well.
- Turn off your electronics. Your cell phone is important to have just in case of emergency, but keep the display as dark as possible.
- White noise masks sound and can block noise. You can purchase a white noise machine, but a running fan, radio static, or air conditioner can give off similar mixed-frequency noise. Sound machines can provide nature sounds, sounds of the sea, or wind in the trees to lull you to sleep. There are apps that can provide relaxing sounds to relax you to sleep.
- If you want no sound at all, invest in earplugs. You can find flexible, affordable earplugs that are rated at decibel levels and if you live in an apartment building where the walls are usually pretty thin, this would be a great investment. (Perry, Leah, 2017)

Exercising for Your Sleep

If you want to fall asleep quicker and wake up more rested, more awake, and alert, give yourself a ten-minute exercise break. Whether it's walking or cycling or a ten-minute aerobic video to get yourself going, you can improve the quality of your sleep by exercising, especially if you do it on a regular basis. (Sleep.org, 2018)

Exercise improves your sleep quality. It may also support sleep in other ways. It can reduce stress and reduce the risk of having sleep disorders develop like sleep apnea and restless leg syndrome. If you exercise outdoors, it allows the body to absorb natural sunlight and get a dose of Vitamin D to boot. (Sleep.org, 2018)

When you exercise in the early morning and afternoon, it can also aid in resetting the sleep-wake cycle. This slightly raises the body temperature, and then it allows the temperature to drop and prompt sleepiness in a few hours later. (Sleep.org, 2018)

Exercising close to bedtime is an individual choice. For some, the over-stimulation of the body and the increase of endorphins can interfere with their ability to fall asleep. But for some, exercising at night has no ill effect on their sleep cycle and has no problem easily falling asleep. If exercise disrupts your ability to fall asleep, then switch it to earlier in the day, but if you exercise at night and have no problem falling asleep, don't give it up. (Sleep.org, 2018)

A Word to New Parents and Sleep

Although you have a new person in your life that you need to take care of and give your utmost undivided attention, you still need to sleep. Sleeping in intermittent spurts, two or so hours at night for an ongoing basis creates something that's known as "sleep debt" and can be difficult to pay back. That means that you aren't getting enough of the 7 to 7.5 hours all adults need to function properly

and falling away from getting the right amount of sleep can generate a health problem. (Sleep.org, 2018)

Some Advice on How to Get More Sleep

- When the baby sleeps, you sleep. Don't worry about the dishes in the sink, or the pile of laundry that has yet to be done for the day, or the overall mess that your house has fallen into. Let it go and get some shut-eye.
- Prepare feeding bottles ahead of time for those overnight feedings and trade off alternate nights with your partner. This will split the load of the consistent feeding that an infant needs in its first few months and allow that you both get uninterrupted sleep every other night. Well, as uninterrupted as possible.
- If family and friends offer to help with your newborn, take the offer. This way, you can get some sleep. You can ask if your visiting family member or friend can also do an errand for you and save you the trip to the supermarket or walking the dog. Let them visit with the baby while you go take a nap. (Sleep.org, 2018)
- If you are feeling the exhaustion that most new parents feels, but the level is even more than you can handle, check in with your physician and see if there are ways that can be suggested to adjust the baby's feeding schedule. Also, your physician may discover and treat a condition that may be underlying and unchecked. Postpartum depression may be in play and could be preventing you from getting the sleep you need. (Sleep.org, 2018)

So, in the first weeks of your newborn's life, you will feel like you're living in a surreal state with bloodshot eyes and the constant feeling of exhaustion. However, feeling deprived of sleep

will ease as your newborn adapts to a new sleep schedule of their own and finally sleep through the night. Remember, it may be all new to you, but it's new to that little newcomer to your world as well.

There are so many things that affect our sleep — blue light, caffeine, eating too late, noise, exercise, and even the newest members of our family. Becoming aware of what triggers sleeplessness or fitful sleep and finding the remedy will help you to get a more restful, peaceful sleep, and prevent many maladies that occur when our sleep is not the best it can be.

3

BENEFITS OF SLEEP – AUTOPHAGY, WEIGHT LOSS, HEALTH

Sleep in itself is pretty great. You get to shut out the world (and the noise after reading the steps you can take in Chapter 2) and rest the brain, body, and spirit in the 7-7.5 hours that are allotted for a restful, healthful sleep. The words "you'll feel better after a good night's sleep" are true. There are many benefits to sleep. It rejuvenates you, makes you alert, full of energy, and ready to meet the world.

In this chapter, we'll take a look at what benefits we get from sleep. How our body, cellular makeup, and other organs get a boost every time we go to sleep.

Benefits of Sleep

We are in the world of demand — mostly, the demands are on us. Our job, family, tasks that need attention, errands that need running, kids sporting events that we just can't miss and events that we don't want to miss keep our time pretty much in demand. Oh, yes, forgot one other thing — the time to relax. Where exactly does that fit in?

Sometimes, with all the running that we do, we end up sacrificing

sleep, and that's not a wise thing to do because sleep affects our physical and mental health. The lack of sleep can leave us feeling off-center, grumpy, and sometimes, not making the best of decisions that we would otherwise make if we were more clear-headed and alert.

Sleep doesn't just help us feel rested and alert. Even though we feel like our brain and our bodies have shut down, they are still very active with our sleep doing some housecleaning to prepare us for our next day.

Getting regular sleep recharges our batteries, attends to all the metabolic performance that's needed by the body and wake up feeling ready to start your day. (Dyer, 2018)

One of the fascinating processes that happen while we're sleeping is how our cells are rejuvenated through autophagy.

What is Autophagy?

Autophagy is the process which the body cleans out cells that are damaged and toxins and helps the body regenerate healthier newer cells. The word autophagy means to eat oneself, originating from auto (Greek meaning self) and phagein (Greek to eat). Our cells clean out damaged parts and then clean themselves up to be new and refreshed again.

Our cells become cell machinery. Autophagy is the mechanism the body uses to self-clean and rid the cell of the old by recycling and breaking down damaged molecules and cellular organelles. The build-up of this "junk" in our cells could be responsible for the effects of aging.

The best example of what happens with your cells during autophagy is when you buy a brand-new car. It's in great shape and rides like a dream. You're driving it for a few years and there

some wear and tear to the exterior from the weather and the engine needs a tune-up and maybe the spark plugs need to be replaced. You thought that you may need to buy a new car, but once the spark plugs are replaced, and you get some touch-up paint from the dealer, you find that the car looks and drives like new.

For our cells, this is what happens at the sub-cellular level. The entire cell doesn't need to be replaced, but the damaged portions need to be repaired. The sub-cellular organelles (old cell membranes) are destroyed and cellular debris is eliminated. This is accomplished by distributing it to the lysosome, an organelle that degrades proteins with the enzymes it contains. (Jung MD, 2016)

The process of autophagy happens during sleep. It repairs itself and the autophagy process gets into full swing. The way autophagy is activated is by the deprivation of nutrients. Glucagon, a hormone that is the opposite of insulin, goes down when our insulin levels go up. When we go to sleep, our insulin level goes down because we are not eating. This point is when glucagon increases and fuels autophagy to begin its process. If you are on a diet or have incorporated fasting in your life, this will give autophagy an even higher boost because there is a set period of time when you are not ingesting food and your insulin level is low.

Autophagy is cell maintenance. It usually is quietly going along and doing its thing. Activating autophagy reduces inflammation, slows down the process of aging, and increases the ability for the body to function naturally. Autophagy is quite beneficial for your skin complexion as well. (Hand, Julie, 2019)

Autophagy is one of the many benefits that come with sleep. Another benefit is weight loss. You may ask the question "how does sleep help me to lose weight?"

Weight Loss and Sleep

Research has shown that sleeping less than 7 hours a night can cause you to gain weight, even if you're dieting and trying to lose weight.

A research study was done where a group of dieters was split into two groups and put on separate sleep schedules with one group getting 7 plus hours of sleep and the other group sleeping less than 7 hours a night. The group that had adequate sleep lost half the weight from fat and no muscle, while the group that was deprived of adequate sleep lost 55% less fat in comparison. The second group also felt hungrier and their hunger was less satiated even after a meal. Additionally, they lacked the energy to exercise. (Greenfield, Ben, 2016)

If you want to get the most out of your diet, plan to hit the bed a little earlier than usual so that you can make sure you get the appropriate amount of sleep.

The same sectors of the brain control your metabolism and sleep. There are certain hormones that increase in your blood and the same hormones stir up your appetite. (Sparacino, Alyssa, 2018)

So, the truth is, if you are deprived of the amount of sleep you should be getting, you won't lose the weight that you want, even if you're dieting. If you're eating right, take some time to exercise, even if it's stretching, and then set your routine so that you're in bed and getting the benefits of losing weight because you're sleeping well. (Sparacino, Alyssa, 2018)

Sleep and Your Overall Health

Sleep has the ability to remedy many of the other maladies that we may have or it can prevent us from taking any on. When you get a cold or flu, the physician's advice to "stay in bed and get some

rest" has real meaning in taking care of your overall health. Some people ignore that advice and they find either their cold doesn't get better until they finally give in and do as the doctor ordered, or they get systematically worse and a cold that could have been kicked to the curb in two to three days turns into pneumonia and they are being admitted to the hospital in order to finally get well.

Getting solid, beneficial sleep is an important part of a healthy lifestyle. So what are the other benefits you get when you get a good night's sleep?

Your Memory Improves

The brain is incredibly busy while you're sleeping. The learning process is strengthened when we sleep. Consolidation, where memories or "practice" abilities that you learn while you were awake, are learned better when you're asleep. Something that's learned when you're awake, either mental or physical, is learned with practice only to a certain point. But when you're asleep, whatever it was that you were learning is reinforced when you're sleeping. It's almost like planting seeds and have them grow overnight. So, if you're learning a new language or dance steps for a recital, you'll be able to perform a lot better after you had your sleep. (Sparacino, Alyssa, 2018)

You Can Actually Live Longer and Prevent Disease

Sleep can affect your quality of life. A shorter lifespan is associated with the amount of sleep you get, either too little or too much, but it has not been clear if the length of time is a cause or effect. (Sparacino, Alyssa, 2018)

Heart disease, diabetes, stroke, arthritis, and even premature aging are linked to inflammation. People getting less than six or seven hours of sleep per night shows that they have higher blood levels of inflammatory proteins than people who got more sleep. Getting

sufficient sleep of at least 7-7.5 hours will curb the inflammation that causes these diseases. (Sparacino, Alyssa, 2018)

Heart Health and Sleep

Surprisingly, doctors ignored the benefits of sleep and its link to better health. Now, there is a better understanding of the importance of overall health, well-being, and sleep.

Research has shown that strokes and heart attacks are probable to happen over the early morning hours. This may be due to how sleep and blood vessels interact. Cholesterol and blood pressure have been linked with sleep deprivation and are high-risk causes of stroke and heart disease. Getting 7-9 hours of sleep each night will promote a healthier heart. (Stibich, 2018)

Cancer Prevention

Researchers believe that exposure to light reduces melatonin levels and that people who have late shift jobs are risking the development of colon and breast cancer due to continuous exposure to light. Melatonin, the hormone that regulates our sleep-wake cycle, is believed to suppress tumor growth. Avoid using electronics prior to sleep and keep the room dark in order to be able to produce sleep-inducing melatonin.

Take A Nap

Although some people feel that taking a nap will interfere with their sleep at night, there are some who are revitalized by taking a short nap. It can be refreshing and a good substitute for caffeine. A research study showed that people who took a nap several times during the week had a lesser risk of dying from heart disease, and their levels of stress were quite reduced.

Stimulate your Creativity

Want to paint that masterpiece or write that novel? A good night's sleep may just be the way to get them done.

Your brain reorganizes and restructures while you sleep in addition to combining, consolidating, and strengthening memories. This may result in heightened creativity as well.

Lower your Stress Levels

Stress and sleep can affect your cardiovascular health. Sleep helps to reduce stress levels and can also help people control their blood pressure. Additionally, cholesterol levels that have an impact on heart disease can also be lowered with appropriate sleep. (Sparacino, Alyssa, 2018)

Help for Depression

If you lack sleep, you may tend to be moody and a bit grumpy. Your overall well-being can be maintained with a good night's sleep. It can help get your mood back in sync and help diminish anxiety.

If your job is causing you to put in those long hours during the week and contributing to your bad mood or anxiety, sleeping more on the weekend is not really the answer. You're not getting the right amount of sleep during the week and to maintain an even keel. It's all about balance. (Sparacino, Alyssa, 2018)

You can Avoid Accidents

Sleepiness behind the wheel is one of the most underrated problems, yet its costs are enormous. Being sleepy behind the wheel affects decision-making and reaction time. If you've had insufficient sleep even for one night, your ability to drive can be compared as having a drink of alcohol.

Sleep is not only a time for our conscious self to disappear into

another realm, but it is also a healing and restorative process that needs the time to allow our body to be refreshed, our damaged cells to be repaired, and the "house cleaning" the body needs to be accomplished successfully.

There are so many benefits to sleep, that it would be a shame to miss out on them. Get your sleep routine in gear and go get some sleep!

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DIFFERENT SLEEP NEEDS OF DIFFERENT AGES

Remember as a young child in pre-school years, when your mother would put you down for a nap? At the time, you didn't understand why you couldn't stay up and play with your toys or be outside with your friends, but when it was nap time, into the bed you'd go, even if you didn't want to. Mom always won.

As our bodies grow and change over time, so too, does the amount of sleep that we need and adjusts with these changes. Babies and toddlers as well as children and teenagers all need quite a lot more sleep than adults. The reason for this is their physical growth and their mental development happens at a rapid pace, and sleep helps support this growth as they transition through it. Although parents know that growing boys and girls need to get as much sleep as possible, many are not really sure how much is required, and why missing even a half hour of sleep can negatively impact their child. (National Sleep Foundation, 2019)

Kids don't slow down the way an adult does; they wind up instead, making it difficult to know whether they're getting a sufficient amount of sleep. Sleepiness, when attributed to children, mimics symptoms of ADHD (attention deficit-hyperactivity disorder).

When kids get sleepy, they act out and feign that they're not tired, resist going to sleep and, as time goes on, they become more hyper. Actually, they're overtired and by the time they do fall asleep, they may not get a restful night of sleep that they could have gotten had they fallen asleep earlier in the evening. (National Sleep Foundation, 2019)

Underlying psychiatric disorders, such as ADHD, can cause children to lose sleep. Additionally, sleep apnea, a sleeping disorder that people think is one that only affects adults, is comparatively common in children. If a child snores, they may be currently or at risk of developing sleep apnea. It has been recently advocated that pediatricians speak to parents about this possible condition and screen for this disorder by the American Academy of Pediatrics.

If you think your child isn't getting enough sleep, speak with your pediatrician, especially if there is a medical condition or the possibility of an underlying condition that may be disruptive to the child's sleep. A visit to a sleep specialist may be needed to develop some options for treatment. Changes in habits and the setting that surrounds a child's bedtime can be helpful in improving the child's sleep environment. An early bedtime, between 7-8 pm for babies and school-age children, with an established consistent routine that winds down the day's activities, works best for children. Turning off the tablets, laptops, cell phones, the TV, and shutting off all lights will give the child a better night's sleep. (National Sleep Foundation, 2019)

Although all children are slightly different in the amount of sleep needed, the following encompasses the variances of what most children need to be fully rested. Some children are more active than others, thus the different appropriate time frames that are noted. (National Sleep Foundation, 2019)

Newborns 0-3 months - Overall, 14-17 hours are recommended.

Hours that may be appropriate are 11-13 hours. Less than 11 hours is not recommended.

Hours that may be appropriate are 18-19 hours. More than 19 hours is not recommended (National Sleep Foundation, 2019).

Infants4-11 months - Overall, 12-15 hours are recommended. Hours that may be appropriate are 10-11 hours. Less than 10 hours is not recommended.

Hours that may be appropriate are 16-18 hours. More than 18 hours is not recommended (National Sleep Foundation, 2019)

Toddlers 1-2 years – Overall 11-14 hours are recommended. Hours that may be appropriate are 9-10 hours. Less than 9 hours is not recommended.

Hours that may be appropriate are 15-16 hours. Sixteen hours and more are not suggested.

Preschoolers 3-5 yrs old – Overall 10-13 hours are recommended. Hours that may be appropriate are 9-10 hours. Less than 9 hours is not recommended.

14 hours may be appropriate. More than 14 hours is not recommended.

Children of School-age6-13 years – Overall 9-11 hours are recommended. Hours that may be appropriate are 7-8 hours. Less than 7 hours is not recommended.

12 hours may be appropriate. It is not recommended to sleep for twelve hours and more.

Teenagers 14-17 yrs – Eight to ten hours are recommended. Hours that may be appropriate are 7 hours. Less than 7 hours is not recommended.

11 hours may be appropriate. Eleven hours and more is not recommended.

Young Adults 18-25 yrs – Seven to nine hours are recommended. Hours that may be appropriate are 6 hours. Less than 6 hours is not recommended

10-11 hours may be appropriate. More than 11 hours is not recommended

Adolescents and Sleep (National Sleep Foundation, 2019)

If there is one thing that adolescents are infamous for is not getting enough sleep. What they get is an average of 7 to 7 ¼ hours, but what they really need is 9 to 9 ½ hours of sleep. There are several reasons that teens don't get a sufficient amount of needed sleep: (Mindell JA & Owens JA, 2003)

- When puberty occurs, an approximate two-hour shift in teens happens to their internal clock. This means that a teenager who used to fall asleep at 9 pm will now be falling asleep at 11 pm. They will also be waking 2 hours later. (Mindell JA & Owens JA, 2003)
- Many school districts have early start times that necessitate for students to wake up as early as 5 am to travel and arrive at their school for a 7 am class. This can be disruptive and depriving of a teen's need for sleep.
- School and social commitments can lead to later bedtimes. Homework, after-school activities that happen in the evening, and sports all play a role with teens not getting enough sleep. (Mindell JA & Owens JA, 2003)

Because teens are sleep deprived, it can impact many facets of their behavior:

- Their mood can be affected – when deprived of sufficient sleep, a teenager can become irritable, cranky, and moody. Additionally, they will have a hard time adapting their moods and can exhibit frustration or become upset very easily. (Mindell JA & Owens JA, 2003)
- Sleep deprived teens may act loopy and get involved in dangerous behavior like speeding, drinking, and other activities that could possibly harm them or others.
- Studies have shown that teenagers not getting an ample amount of sleep are apt to receive poor grades in their school courses, have more absenteeism, fall asleep in their classes, and are late for classes.
- Teens have problems with paying attention in class, memory, reaction time, decision, and creativity when they get an inadequate amount of sleep. Their cognitive ability is weakened because of lack of sleep. (Mindell JA & Owens JA, 2003)
- There is a danger that teens who are not getting enough sleep are at risk behind the wheel and doze off while driving. This can happen in the middle of the night, but can also happen during the afternoon hours, when they're traveling home from school or to an after-school job or activity.

Helping your Teen to Get Enough Sleep

- Make sure your teen has a regular sleep schedule they can stick to by going to sleep and waking up at approximately the same time every day. Discourage any use of cell phones, tablets, and TV watching at least an hour before bedtime to allow a winding down from the day and the ability to produce the melatonin needed to sleep (Mindell JA & Owens JA, 2003)

- Don't let your teen oversleep on the weekend. It can help to catch up with sleep, but sleeping in until 1 pm on a Sunday will throw off the sleep schedule and make it hard to get back into it that night.
- Taking a nap in the afternoon for a brief 15 to 20 minutes can help your teen feel refreshed, yet not throw off their sleep schedule.
- Set a time when the TV, computers, and cell phones are turned off and end any other activities that are stimulating before bedtime. This will help teens to fall asleep and keep to their sleep schedule. (Mindell JA & Owens JA, 2003)
- Discourage smoking, alcohol, caffeine, and drugs that are disruptive to the ability to fall asleep and are dangerous to a teenager's health.
- If your teen seems to be overly sleepy during the day, snores, or is having a hard time falling asleep, speak to their physician to address these issues and find out whether there are any underlying issues or hidden illness that are causing any of these problems (Mindell JA & Owens JA, 2003) (National Sleep Foundation, 2019)

How much do teen athletes need?

Researchers think athletic performance is enhanced by deep sleep because the growth hormone is released at this time. This hormone promotes muscle repair and growth, fat burning and bone building, and aids in recovery of the athlete. The release of the growth hormone is slowed down by sleep deprivation. Also, if an athlete is learning a new technique or skill, this sleep is a critical phase for some athletes. (Quinn, 2018)

Sleep experts advise that adolescents and teens who are involved in athletics get 9-10 hours of sleep. Sleep can improve a teen's

sports performance. A few guidelines will help a teen athlete excel in his or her sports endeavor:

- Sleep should be a priority in the training schedule.
- Prior to a major competition, increase the sleep time a few weeks before the event.
- Keep a sleep schedule by going to sleep and waking up each day at similar times.
- If you don't get enough sleep each night (studying for a test or school event that runs late into the evening), take naps to balance out the sleep time lost.

How Much Sleep Do Adults Need?

If you're feeling sleepy during the day and nothing you do seems to shake it, you may not be getting as much sleep as you need. As our bodies change and we age, the amount of sleep we used to get may not be enough now to feel fully rested. There are some factors that may be coming into play that are affecting the amount of sleep you need. (Peters, 2018)

Genetics, age, the daily demands made on you during the day, and overall health are likely to determine the amount of sleep you need. This accounts on how some people can get by and sleep less than others. As we age, the ability to sleep at night may decrease causing increased insomnia and more time in lighter sleep. Chronic pain and sleep disorders such as sleep apnea and other medical problems may have an effect on the ability to sleep. Physical activity, including increased or decreased exercise may also affect sleep needs. (Peters, 2018)

Average, healthy adults need 7-9 hours of sleep each night. Sleep experiments have shown that in order to sidestep harmful effects

on functioning in the daytime, the amount of sleep needed is approximately 8 hours and 10 minutes.

Height, weight, intelligence, type of employment, and energy exerted during the course of a day and other factors come into play and there are people at the extremes that may not fit into the average. Some people need only 6 hours of sleep and will wake up feeling refreshed and rested with no negative consequences. Staying in bed any longer would cause insomnia. Conversely, there are people who need 9 or more hours and if they only get 8 hours of sleep, they would probably feel sleep deprived. (Peters, 2018)

Keeping regular times to go to sleep and awaken will help to get the amount of sleep needed. If you're sleepy, go to bed, don't fight it. When awakening in the morning, do some stretching and, if the sun's out, get 15-30 minutes of sunlight exposure.

Sleep and Aging Seniors

As we age, physical changes and changes in sleep patterns are a part of the normal progression of age. Falling asleep and remaining asleep is more troublesome. The changes in sleep patterns, called the sleep architecture by specialists, happen as we age and may add to sleep problems. (National Sleep Foundation, 2019)

Do seniors sleep less? Now that their metabolism has slowed down, and many are retired and not expending as much energy in a day-in, day-out job that includes commuting and long hours at the job, the answer would probably be yes.

No, seniors don't sleep less, but the kind of sleep they need is different. Although it is usually believed that seniors don't need less sleep than the average adult, they need the same amount of sleep from the time they're in their 20s to their senior years. Of

course, this is depending on each individual's needs. However, many seniors get less sleep than what they really need for a number of reasons. (Dixon, Jennifer, 2016)

There are quite a few seniors who don't get enough sleep because they suffer from insomnia which, for seniors, is more common. Some of the reasons are health issues, concerns and the anxiety of aging, and medications that may make falling asleep difficult. Sleep apnea and restless leg syndrome are other sleep disorders that increase with age. Sleep can be disrupted from arthritis pain and frequent urination and are all too common and disturbs a senior's sleep. (Dixon, Jennifer, 2016)

Another reason for senior sleep problems lay in the setting in of the syndrome called advanced sleep phase. This causes the internal clock to adjust to earlier times to go to sleep and to wake up. This happens as adults age. However, there are those seniors who stay up late as they did when they were younger and the result of this is often sleep-deprivation. (Dixon, Jennifer, 2016)

Sleep happens in multiple stages. There are periods of light and deep sleep, dreamless periods, and intermittent periods of dreaming (REM) sleep. This cycle repeats itself a number of times over the course of the night and older people spend much of the time in the lighter sleep stage rather than in a deep sleep.

There are many older adults who feel less satisfied with their sleep and during the day, feel more tired. It seems that some of the elements of this problem are that it takes longer to fall asleep (known as sleep latency), an increase in the fragmentation of the sleep cycle (waking up in the middle of the night), and a decline in REM sleep. Other issues that add to sleep disturbances can be psychiatric and physical illnesses and the medications that are prescribed to treat them. (National Sleep Foundation, 2019)

Other factors that affect sleep are the changes in the sleep architecture that happen with age. In addition, there are the circadian rhythms that synchronize all the timings involved in bodily functions, including sleep.

Insomnia seems to have a higher prevalence with older adults. Seniors experience one or more symptoms of insomnia over the week a few nights or more and are often linked to an underlying psychiatric or medical condition. (National Sleep Foundation, 2019)

Sleep is a necessity for humans. As we can see, age has a lot to do with how much sleep is needed. Babies and young children, for the most part, have no problem fulfilling the amount they should be getting.

It's only as we age that we begin to see how the amount of sleep that's needed changes, although not by much. Once we are in our adulthood, the average amount of sleep we should be getting doesn't vary much from the time we're in our 20s up to when we hit our senior years.

The lack of sleep should not be an option. It affects our health and well-being. Maintain a healthy, well-planned sleep routine, and you'll see yourself well into your senior years hopefully with good health on your side.

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DETRIMENTS FROM NOT GETTING ENOUGH SLEEP

Grumpy, cranky, impatient, frustrated, forgetful, and just plain tired. These are just a few moods and conditions that come about when we don't get enough sleep.

Yawning, fatigue, daytime sleepiness, and irritability are some of the obvious signs of sleep deprivation. Caffeine is not really a resolution to the problem. Your body and brain need sleep. (Pietrangelo, 2017)

Just as your body needs air, food, and water to function, it needs sleep as well. While you sleep, the chemical balance in the body is restored and it heals itself.

The brain builds new connections and aids memory retention. The body can't function in a normal manner without sleep. Chronic sleeplessness can actually lower your quality of life. (Pietrangelo, 2017)

It's become a real problem. People are not getting enough sleep. And when that happens, the world is out of sync for them. Being sleep deprived can be the cause of a number of mood issues, as well as psychological and physical illnesses. Accidents can happen

more easily when we are sleep deprived. Our emotional health is at stake without the necessary sleep that we need every night, not just intermittently done with "makeup sleep."

How Does Sleep Deprivation Affect Us?

Snoring and Sleep Deprivation

The main cause of sleep being disrupted for 90 million Americans is snoring. Snoring has been most usually linked with overweight people, and the condition worsens with age. (Sleep Foundation.org, 2019)

Being on the receiving end of being kept awake by constant snoring is no fun and the continuous disruption of sleep can be the culprit in creating other detriments because of the lack of sleep.

However, snoring can be a sign of an underlying and more serious health issue. An enlarged tonsil or deviated septum can cause snoring. These can lead to a narrower passageway in a person's throat and causes the breathing to be noisy. Allergy season, when active and in the full throes of suffering through it, inflames the nose and throat and can trigger snoring. A head cold can also cause snoring. Other health issues that can be caused by snoring are drowsiness during the day, morning headaches, chest pains at night, waking up gasping for air, and pauses in breathing at night. (Sleep Foundation.org, 2019)

Sleep apnea is a disorder connected to snoring and can pave the way for more serious illnesses, such as cardiovascular disease and high blood pressure.

The Lack of Sleep Can Hurt Emotional Health

The lack of sleep can put us on a short fuse and make us irritable and testy. Sleep deprivation affects our ability to clearly think and

hurts our emotional well-being. It affects our mental health, relationships, and the performance of daily tasks. We become emotionally reactive, and unfortunately, lose a few friends or have what would otherwise be nonsense arguments with family or coworkers and lose our ability to deal with our children for small mishaps that would usually be addressed calmly and reasonably. (Breus, 2018)

Emotional reactivity goes past irritable and cranky. These feelings can be draining and leave us feeling critical of how we're not being more proficient in handling and managing our emotions.

According to research, even one night's experience of sleep deprivation can get us to react more intensely and impulsively to unpleasant and negative situations. When the sleep debt is chronic, it becomes a daily chore just dealing with these heightened emotions. (Breus, 2018)

If there is a continued lack of sleep, you may begin hallucinating, and it can activate mania in people who suffer from manic depression. Impulsive behavior, paranoia, depression, and suicidal thoughts can manifest from sleep deprivation.

(Pietrangelo, 2017)

Although we're continually learning about how sleep and emotions are connected, it is known that sleep deprivation can affect the emotional centers of the brain which are complex and the cause of us lashing out in frustration and anger. It can have us overreact to the slightest irritants that would not normally warrant any irritation at all. (Breus, 2018)

We know that our emotional centers in the brain are affected by sleep deprivation, so it's not hard to imagine how the lack of sleep can add to a negative mindset. When we lack sleep, we focus on the negative or what psychologists call repetitive negative think-

ing. The mind is in a negative place and is stuck and thinking about the same negative and frustrating thoughts over and over again. These negative thoughts are hard to control, intrusive, and can really impact how you function and feel. The link between developing depression and anxiety are a result of repetitive negative thinking. (Breus, 2018)

New studies reveal that people who are sleep deprived have more repetitive thoughts and have little control of their minds' preoccupation on the negative than those who have had better sleep and are more rested. It was also found that the more profound the lack of sleep, the harder it was for people to control their minds from contemplating their negative thoughts, experiences, and feelings. No one volunteers to focus on negative thinking, but when you are sleep deprived on a consistent basis, it can be a cycle that's difficult to break. (Breus, 2018)

Another off-shoot of sleep deprivation is that it increases the worry factor for those who are lacking sleep. If you're already a worry-wort, not getting enough sleep will only exacerbate the condition of worrying about everything. Scientists call this anticipatory anxiety, worrying about what's going to happen even before the event is at hand. Anxiety also makes sleep harder to come by and sleep deprivation adds to an anxiety disorder. (Breus, 2018)

Relationships can really suffer when you are sleep deprived. Frankly, it undermines what would normally be a healthy relationship. Sleep deprivation, the onset of anxiety and stress issues as well as other emotional problems can literally sink a healthy sex life. A healthy relationship can usually weather most storms, but a relationship that is faced with lagging sex life and a partner who is emotionally reactive, anxious, and depressed from the lack of sleep is difficult to weather.

Scientists have also found that gratitude is diminished for our

romantic partners due to the lack of sleep. Interestingly, both partners had the same diminished feelings, although only one of the partners was the one lacking sleep. It also lessens empathy, an emotion that is crucial to a healthy relationship. The ability to understand the other person's thoughts, experiences, and feelings are lacking when there is a diminished amount of empathy due to sleep deprivation.

When we lack empathy, we're unable to see how things are from the point of view of the other person and less able to imagine and know their feelings. This lines up with the research indicating that the lack of sleep can impair the ability to acknowledge the emotions in others.

Drowsy Driving - Falling asleep behind the wheel

"Drowsy driving" is the result of a driver's ability to drive to become impaired and the inability to remain focused and alert due to sleep deprivation. It has become a safety issue not only to the driver who is driving in this condition but to other drivers around them. This type of impairment can be as much, if not more dangerous than driving while under the influence of alcohol or drugs. (Sleep Foundation.org, 2019)

Drowsy driving is considered impaired driving according to the National Safety Council. It is noted that approximately half of the drivers in the US profess that they have gotten behind the wheel while feeling drowsy and 20% of those driving drowsy admit to falling asleep behind the wheel sometime in the last year. Additionally, 40% acknowledge this has occurred at least once in all the time they've been driving. (National Safety Council.org, 2019)

As noted earlier, driving while you are in a drowsy state is similar to driving while intoxicated. A driver's reaction time, hazard awareness, and the ability to maintain attention to what's going on

around them gets worse the sleepier a driver is while behind the wheel. (National Safety Council.org, 2019)

If you are behind the wheel and haven't slept in more than 20 hours, it is recognized as equal to driving with a concentration of blood-alcohol of 0.08% which is the US legal limit.

If you are drowsy or fatigued, the likelihood of having an auto accident is three times more likely.

Some drivers may not realize that they are impaired or fatigued. Signs of this condition are not easy to identify. Sometimes, an experience of micro-sleep, a

4 or 5-second burst of inattention, happens. The vehicle, if driving at highway speed, can travel the length of a football field. This is dangerous because the driver can veer into the next lane, or into oncoming traffic in those few seconds of inattention.

Each year, 100,000 crashes that are police-reported have involved drowsy driving according to the National Highway Traffic Safety Administration (NHTSA) resulting in 71,000 injuries and over 1,550 mortalities.

An estimated 328,000 crashes involving drowsy driving occur annually according to a study by the AAA Foundation of Traffic Safety. This number is more than three times the police-reported accidents. There were 109,000 of these crashes that resulted in injury and approximately 6,400 resulted in the loss of life according to the same study. In actuality, the researchers have suggested that the occurrences of fatalities linked to drowsy driving are more than 350%, far greater than reported. (National Safety Council.org, 2019)

There is also an economic toll. NHTSA estimates that crashes that are fatigue-related costs not less than $109 billion annually in

total, not including any property damage involved in these accidents.

It has been reported that 50% or more of drowsy driving accidents especially affects persons under 25 years of age. These accidents affect everyone, but the predominance of accidents involving this age group is striking. (National Safety Council.org, 2019)

An intervention that is focusing on this problem and with males especially, can help in reducing driving while sleep impaired. New safety technologies are or have been put into places such as lane departure warnings and drowsiness alerts that can detect the patterns of drowsy driving and caution drivers to remain in their lane or take a break from driving drowsy. (National Safety Council.org, 2019)

Colleges students usually sleep less than six hours on average and some estimates at even lower than six hours per night. Programs aimed at educating these students about drowsy driving and their sleep deprivation may help in limiting drowsy driving and give them healthier and better actions and behaviors that will stay with them well into adulthood.

Sleep deprivation can be dangerous, deadly, and costly. If you're on the road and feel that you can't drive because of the feeling of fatigue or your attention is adrift, pull over and get off the road. If there are reasons that you're not getting enough sleep and have done all you can do to get more rest, it's time to call up your physician and make an appointment. There may be an underlying medical issue that is causing your fatigue. (National Safety Council.org, 2019)

The Endocrine System and Sleep

The Endocrine System's Function

Chemicals and hormones produced in our body are produced and secreted by these glands that compose the Endocrine System. The substances and hormones that are released control the activity of organs and cells. The hormones control the body's metabolism, growth that are the chemical and physical processes of the body, and sexual development and function. (Kemp, 2018)

Endocrine System and Lack of Sleep

What your hormones usually do is maintain and balance all the organs and give signals to the body so it knows what to do. When you have too little sleep, your hormones go off-kilter.

How Hormones Act When you Lack Sleep

Insulin is the key fat-storing hormone that is essential for your survival. When you have more insulin, more fat is stored. When you get the proper amount of sleep, insulin reacts to carbohydrates. When you lack sleep, you briefly become insulin-resistant. You produce more insulin, and the more insulin you store, the more fat is stored. This is what leads to weight gain. (Salzberger, 2016)

Ghrelin and Leptin These two hormones interact with your hunger and appetite. Simply put, ghrelin is the hormone that triggers our appetite and leptin is the hormone that is supposed to get us to stop.

If you lack sleep, more reduced levels of leptin will be overtaken by more production of ghrelin, so you're hungry all day long. If you're trying to lose weight or are on a diet and don't get enough sleep, it will be almost impossible to lose the weight. The overpro-

duction of ghrelin will cause your body to think it's hungry, even if you're full. (Salzberger, 2016)

Cortisol – This is the stress hormone that your body produces. If you're really stressed, you need more energy to handle whatever you need to handle at the moment. Cortisol turns energy that's stored to usable energy and helps you to be awake and alert. This is a good thing.

The bad thing is, lack of sleep increases the production of cortisol. Your body stores fat and burns muscle, which is not a good thing. You want to burn fat, not muscle. (Salzberger, 2016)

Human Growth Hormone – known as HGH is the hormone you want to remain slim, sexy, and young. The highest levels of HGH are produced when you are in deep sleep. HGH decreases the degree in which cells use carbohydrates and increases the rate they use fats.

If you get less sleep, deep sleep is less, and HGH levels aren't that high. In fact, it reduces HGH, and the cells store fat instead of using the fats.

Without the proper amount of sleep, you will probably gain weight rather than lose it, even if you're dieting. Your body will burn muscle, not fat.

Getting the right amount of sleep can reverse the processes, but the sleep has to be nightly and consistently. (Salzberger, 2016)

Lack of Sleep can Impair Your Immune System

Every time you catch a cold or worse, the flu, everyone is well-meaning about chicken soup, plenty of liquids, Vitamin C, and on that list is "get some rest."

That's what you should do, get some sleep because your immune

system is affected by sleep deprivation. If you don't sleep enough, you will get sick. As you already know, the lack of sleep is connected to problems with our mental and physical well-being. You can include your immune system on that list. (Peri, 2019)

The immune system defends us from colds, the flu, and other maladies, but when it's malfunctioning, it's not doing the job and the result can be a lot more sick days than you want.

The immune system is a complex one that is made up of numerous types of proteins and cells. Their job is to keep colds and flu away. When we are deprived of sleep, our T-cells decline and the inflammatory cytokines increase making us prime for the risk of colds or the flu. Sleep deprivation stifles the immune system's ability to function. (Peri, 2019)

The lack of sleep is also linked to how we are able to fight our illness once it's set into our system. When we are able to sleep, the fever responds better. However, if we're not getting any sleep, our body is not fighting the war on infection as it should.

Respiratory System and Sleep

A nighttime breathing order called Obstructive Sleep Apnea (OSA) diminishes the quality of sleep and interferes with your sleep. This disorder wakes you up through the night and causes sleep deprivation leaving you more susceptible to colds, flu, and could lead to chronic lung disease. (Pietrangelo, 2017)

Lack of Sleep Dumbs You Down

Lack of sleep hurts our ability to think and learn and hurts the cognitive processes. It impairs alertness, reasoning, concentration, attention, and problem-solving making it difficult to efficiently learn. If you are not getting enough sleep, you won't remember what was experienced and learned during the day.

The Skin Ages due to Lack of Sleep

Well, this is really bad news. If you don't like the way your skin has been looking lately and you're not getting the shut-eye that you should be getting, the lack of sleep is wreaking havoc on your looks.

Sleep deprivation is not pretty. The skin is sallow and the eyes are puffy after just a few nights of being deprived of restful sleep. Chronic sleep loss leads to dark circles, fine lines, and the skin lacks its usual luster. (Peri, 2019)

The hormone cortisol is released when you don't get sufficient sleep. When cortisol secretes in excessive amounts, the skin's collagen, which is the protein that keeps the elasticity and skin smooth, breaks down.

Sleep deprivation does not allow the body to release enough of the human growth hormone. When we're young, it helps with our growth, and as we age, it aids in increasing muscle mass, the strengthening of our bones, and thickening of the skin. It is during our deep sleep that this hormone is released. It appears to be a part of the repair of normal tissue, mending and reinforcing the day's wear and tear. (Peri, 2019)

Sleep Deprivation and Your Memory

If you want to keep your memory sharp and maintain a quick wit, get plenty of sleep.

Researchers have concluded that brain events are responsible for joining and consolidating memory. These events are known as sharp wave ripples that move information that's learned from the hippocampus to the neocortex of the brain. This is where long-term memories are kept. During the deepest segments of sleep is when sharp wave ripples occur.

When we are deprived of sleep, our memory seems to make us feel as if we're in a fog. Some of the simplest memories suddenly seem to vacate our memory bank. It's after we get a good night's sleep that we remember what it was we were racking our brain trying to remember. In order to maintain a sharp memory, we need to get sufficient sleep. (Peri, 2019)

Weight Gain and the Lack of Sleep

This is not what some of us really want to hear. In our waking hours, we fight to lose weight or maintain it, but if we are sleep deprived, we can gain weight. The saying, "if you snooze, you lose" for once is a good thing because you will not lose weight if you do not snooze.

It seems the lack of sleep is related to the increase in appetite, hunger, and obesity. Studies have targeted the connection between sleep and what regulates the appetite, peptides. Hunger is stimulated by ghrelin and when satisfied, leptin signals the brain and the appetite is suppressed.

Sleep loss seems to stimulate appetite, as well as cravings for high-carbohydrates and high-fat foods. With all the diets that are available, a program for sleep should be included as part of the diet's regimen. (Peri, 2019)

Loss of Sleep can Impair Judgement

Our judgment becomes impaired when we suffer the loss of sleep. It can affect our understanding and interpretation of events. We really can't formulate sound judgments and may not be able to accurately assess situations and proceed to act on them astutely. (Mann, 2019)

When you are deprived of sleep, you can be prone to making unwise and poor judgments about your lack of sleep. Functioning

on less sleep seems to be the norm, with getting about 6 hours of sleep when, in reality, it should be more like 7-7.5 hours of sleep. It seems that the idea of going about your day with less than the appropriate amount of sleep should be looked upon as having something of a WOW factor. It isn't and it's not something that you should get used to.

Specialists point out that if you think you're doing okay on less than the amount of sleep you really need, you're not probably wrong, you are wrong. Mental alertness and performance spiral downhill when you have sleep deprivation and it seems that we lose touch and are really not aware of how impaired we really are. (Mann, 2019)

Sleep, or the lack of it, is not something we should ignore. Hopefully, after reading this chapter, you have a clearer concept of why sleep is so important for your children throughout their stages of growth, young adults and adults, both mature and senior who all need to get a good night's sleep.

The brain and the body cannot function properly without it. As air, food, and water sustain us, so does sleep. Listen to your body and don't ignore the signs. When you feel sleepy, it's time to get to bed. Give in and get to sleep. Your body sends you the signals. Heed them for the maintenance, well-being, and betterment of your health.

6

DISEASES CAUSED OR EXACERBATED BY LACK OF SLEEP

Diseases can run rampant without the proper amount of sleep, and without the appropriate amount of sleep, it can make a disease that is already in play worse.

Poor sleep and the cost it can create is far greater than people think. It may have extreme consequences for our long-term health. (Harvard.edu, 2007)

This chapter is somewhat different from the chapter you just read because it's about illnesses that are serious. If you don't have them already, the lack of sleep can possibly leave you open to them developing. This chapter is about how sleep can ward off the possibility of disease or take care of one that you may already have.

The diseases that you can develop from the lack of sleep are the cardiovascular diseases of heart disease, hypertension, heart failure, heart attack, irregular heartbeat, and diseases that correlate with high blood pressure and stroke. Another disease that can develop or be made worse from sleep deprivation is diabetes. Additionally, serious psychological illnesses such as depression,

irrational thinking, mood disorders, and suicide are all subject to develop due to the lack of sleep.

Heart Disease and Sleep – Heart Attack

Heart disease is a general overall term that denotes problems with the heart and blood circulation. The narrowing of the arteries, caused by the buildup of plaque, is known as atherosclerosis. People who have heart disease have an increased risk for additional cardiovascular issues, such as a stroke or heart attack. (Health Day.com, 2019)

For a healthy heart, sleep is crucial and people who don't get enough sleep are at a greater risk for cardiovascular disease. It doesn't matter the age, exercise routines, smoking habits, or a person's weight. It is extremely important to have quality sleep if you want to reduce the threat of these conditions.

Studies have found that there is no substitute for sleep with regard to a person's health and their immunity to disease. There is always the expressed "diet and exercise" that are good for your health but sleep never seems to get mentioned and it is just as important. (Health 24.com, 2017)

Researchers are not quite clear why it is detrimental to heart health to get less sleep, but they do understand that too little sleep is the cause of disturbances in biological processes such as blood pressure, glucose metabolism, and inflammation. This is also true with too much sleep. (Sleep Foundation.org, 2019)

It is known that sleep is vital to the heart because patients with sleep apnea (a sleep disorder that causes them to wake up in occasionally through the night) frequently have a compromised heart condition. The reason for this is because, without long periods of deep rest, specific chemicals are activated that prevent the body from realizing long periods in which there is a lowering of blood

pressure and heart rate. This can lead to elevated blood pressure during the day and a higher risk of cardiovascular complications. But it doesn't take an underlying health issue or sleep disorder to have effects on the heart. Deprived sleep, whether because of a change in work hours or poor sleep habits can put you at risk. (Sleep Foundation.org, 2019)

The lack of sleep can increase by 100% a person's likelihood of dying from heart disease or stroke, specifically in people with diabetes, obesity, high blood pressure, and cholesterol. Aside from the effects on the heart, with sleep deprivation you can become prone to diseases and infections. (Health 24.com, 2017)

Concerns of developing heart disease are not for older adults only. Researchers have recently learned that adolescents were at a higher risk of developing heart disease and cardiovascular difficulties because they had poor sleep habits and did not sleep well. They had levels of high cholesterol, higher body mass index, waist sizes that were larger than they should be, high blood pressure, and a higher risk of hypertension. Having these types of conditions as teenagers is an open gateway to having major health issues later on in life. This is why it's imperative to guard your sleep at every age. (Sleep Foundation.org, 2019)

Stroke

The lack of sleep significantly increases the risk of stroke. Otherwise, healthy adults who skimp on appropriate sleep can suffer what is known as a transient ischemic attack (mini-stroke) or stroke. (Poladian, 2012)

If you usually sleep only for six hours or less, your chances of risking a stroke are very high, and it doesn't matter if you're overweight or not. Normal-sized adults are just as susceptible. (Poladian, 2012)

Researchers believe that lack of sleep in and of itself is dangerous independent of stroke and other diseases like hypertension, heart failure, and diabetes.

Getting more sleep is something you can control. The need to modify behaviors could change the entire way you approach your bedtime and sleep. Think more about your health and less of that late night show on TV or that project that could wait until tomorrow. (Poladian, 2012)

Hypertension and Blood Pressure

Continually falling behind in the amount of sleep you get affects with your functioning through the day, but it can also have an impact on your heart and create major issues. The Centers for Disease Control and Prevention (CDC) states that one in three Americans has high blood pressure. This figure has slowly increased in the last few decades and does not seem to show any signs of decreasing. Poor diets, lack of sleep, and heritage have more people than ever enduring the effects of high blood pressure. (Amerisleep.com, 2017)

What is Hypertension?

Hypertension is another term used for high blood pressure and happens when the resistance in your arteries has built up too much and circulating blood through the entire body is exceedingly difficult. How hard your heart is working when it is pumping is affected. The harder it has to work the heart becomes strained and won't perform at its best capacity. Studies have discovered that people with existing hypertension will have higher blood pressure through the day just from having one night of inadequate sleep. (Amerisleep.com, 2017)

Over time, your health can be seriously affected by hypertension by possibly causing stroke, heart disease, and congestive heart fail-

ure, a few of many possible illnesses. If your heart is weak, it leaves you open to severe vulnerabilities later on in life.

There is a clear connection between the risk of high blood pressure and the amount of sleep that someone gets. Researchers have found that persons who slept less than 6 hours had a 20% likelihood of developing hypertension. This problem can be avoided by sleeping the recommended amount of 7-7.5 hours of sleep every night. This number may vary as some people need more than 7.5 hours. (American Sleep Association, 2018)

Another study found that people had a higher blood pressure the following day after only sleeping six hours the night before. This was compared to those who had a really good night's sleep. Compounding this situation is the continual lack of sleep. Without the appropriate amount of sleep that helps to revitalize your body, you could be exposing yourself to stressing your body without realizing the consequences until it's too late. (Amerisleep.com, 2017)

If you are a sufferer of sleep apnea, there is an added headache if you have hypertension. Sleep apnea is the relaxation of the throat which restricts airflow into the body. People with sleep apnea are more likely at risk of developing high blood pressure.

When you suffer from sleep apnea and hypertension, simultaneously, the oxygen that flows through the body becomes greatly diminished. The more the reduction of oxygen from the sleep apnea, the higher the blood pressure increases. The combination of this problem can put you more at risk and create even more serious health problems such as stroke and congestive heart failure. (Amerisleep.com, 2017)

Monitoring hypertension and your blood pressure can help to catch and control it. Regular physical checkups with your physi-

cian can alert him or her of the condition and provide guidance and medication to treat it. Changes in diet, sleeping habits and exercise can make a tremendous difference in this condition.

(Amerisleep.com, 2017)

Hypertension is hereditary and apparent in other family members. Getting a checkup and catching it at its early stages will reduce the risk of more serious issues later on.

Interestingly enough, when exercise and diet are implemented in the treatment of hypertension, sleep is the most neglected activity in the treatment plan. Changing how you sleep can impact your blood pressure. (Amerisleep.com, 2017)

Diabetes and the Lack of Sleep

Diabetes and its relationship to sleep are complex, and the professionals agree that there is still so much more to learn about how it all works. This is what they do know – the amount of sleep you get depends on whether or not you will develop

Type 2 diabetes. (Amerisleep.com, 2017)

There is an increasing link between obesity and sleep. Being overweight is the chief cause and risk factor for type 2 diabetes. Up to 90% of people who develop the disease are also obese. Additionally, there are indications that there are a number of ways that not getting enough sleep could lead to weight gain:

Not enough energy to exercise when you're tired - Research indicates that people who are staying up late are sitting more than people who are early risers.

Too tired after work to make healthy food choices - When you're too tired to make healthy food choices (meaning you have to

prepare and cook a meal), ordering takeout or pizza is a lot easier and probably tempts you more than a large salad.

Still up at 1 am? More time to eat – People who are still up well after what should have been their bedtime eat up to 550 more calories than people who get to bed earlier (Amerisleep.com, 2017)

Your hormones are off kilter when you lack sleep – Your body releases more cortisol, the stress hormone, which is connected to weight gain. Ghrelin, the hormone that stimulates appetite is also released into the body. The combination is assured of having you gain weight. (Amerisleep.com, 2017)

There's even more complexity to this situation. When your "sleep debt" begins to build, it starts increasing your blood sugar. In addition, very high levels of the stress hormone cortisol seem to be connected with insulin resistance. Insulin is the hormone that aids the body in regulating blood sugar, but when it's resistant, the body can't carry sugar into the cells for energy.

Although experts have been aware of the relationship between blood sugar and the lack of sleep for quite some time, they have only begun to put together exactly how it all works. There has been more current research that suggests if there is not sufficient sleep, the increase of free fatty acids is increased in the blood. The fatty acid levels appear to reduce the sensitivity of insulin and obstruct the body's capability to metabolize fate. (Amerisleep.com, 2017)

Here's the really incredible aspect as to how quickly this happens to the body. In just *one* night of reduced sleep, the harmful fatty acids increased by an enormous 30% and decreased the participants' capability of regulating blood sugar by almost a quarter. This means that skimping on sleep every now and again could be raising the risk of developing diabetes.

There are a number of other maladies that are linked to type 2 diabetes that makes the situation even worse when you try to get quality sleep.

Peripheral Neuropathy – damage to the nerves in the feet or legs is usual for people with diabetes. This can lead to numbness, burning, tingling, or pain in the legs or feet that make it more difficult to get to sleep. (Amerisleep.com, 2017)

High or Low Blood Sugar – either situation can make it hard to get restful sleep. A blood sugar level that is too high can leave you feeling irritable, disconcerted, and hot. A level of too low blood sugar can cause the body to have a clammy, sweaty feeling, and could also cause nightmares.

Restless Leg Syndrome – another common condition as a result of type 2 diabetes, RLS gives the diabetic the feeling they need to move their legs while they're lying down or sitting, making it more difficult to fall asleep. (Amerisleep.com, 2017)

Nocturia – nighttime urination is a problem that is common among diabetics. This is caused by uncontrolled blood sugar. Higher blood sugar levels in your urine may be the reason to wake up and urinate more frequently at night.

Sleep apnea – Most people who are type 2 diabetics are also sleep apnea sufferers. If this is not treated, the pauses in a person's breathing cause them to wake up a multitude of times through the night and deprive them of the quality sleep they need. (Amerisleep.com, 2017)

The bad news is that, unfortunately, having type 2 diabetes can open the gateway to numerous complications that can make it very hard to get quality sleep. However, the good news is that doctors know quite a bit about the sleep problems that diabetics

have. There are several solutions that may give you the ability to get a better night's sleep. (Amerisleep.com, 2017)

Sleep apnea can be controlled by a CPAP machine. It can keep the airways open, reduces or even eliminates snoring or the pauses in the breath that are disruptive to your sleep.

Peripheral neuropathy and RLS can be maintained with medication. If there is pain experienced in your feet or legs, your physician can aid you in finding a pain reliever that will eliminate the distress or make it more bearable. (Amerisleep.com, 2017)

RSL can be aided by muscle relaxers or medications that increase the dopamine levels in the brain. It's also thought that RLS is linked to blood sugar levels that are too high. Maintaining your blood sugar could be another way to relieve symptoms.

Controlling blood sugar levels can also fend off other glucose-related maladies such as excessive nighttime urination. Work with your physician and other health care professionals to work up a plan that will manage your diabetes. (Amerisleep.com, 2017)

Cancer and the Lack of Sleep

There is some evidence between insufficient sleep and having cancer. There is an increased risk for those who suffer from circadian rhythm disorders. For example, shift works can disrupt the biological clock of the body. Since many biological functions are affected by the internal clock of the body, the risk of having cancer is higher because of this circadian rhythm disruption. This is according to the researchers. There is also a theory that repressing melatonin during nighttime could be somewhat responsible. This repression stems from bright light exposure. This connection was observed by scientists when they were studying with animals. There was a faster growth of cancer when the researchers manipu-

lated the sleep/wake cycles of rodents for a long time. (Sleepfoundation.org, 2019)

It's all about sleep. If you skimp on sleep, you will be doing yourself more harm than good. The illnesses that can develop because of sleep deprivation can be catastrophic to live with on a daily basis. And some of them may kill you earlier than they should. This is not a scare tactic, but a reality.

In order to avoid the risk of these diseases, begin to take stock of what you are doing about your sleep routine and adjust it so you can get the best possible sleep and results from it.

If you are already coping with an illness, consult your doctor and devise a plan that will give you the optimum sleep possible.

7

WHAT CAUSES LACK OF SLEEP?

It's 2 am. "What am I doing up?" you wonder. You went to bed at 10 pm. You closed your eyes, and now, you're still awake four hours later. What is the problem? Why can't you sleep?

If you're in relatively good health, this may be a one-night blip on the sleep radar screen. Was there a "situation" at your job that may have thrown you off? Is there a presentation you're giving in the morning and you want it to go off just right, or are you an athlete who is going to play in a major competition in the morning?

These are normal one-night problems or worries that creep up and keep us awake.

But what about the lack of sleep chronically? What causes the lack of sleep that can become a problem both mentally and physically?

There are all sorts of stresses, illnesses, and even medications that we take to treat an illness that can cause us to lose sleep and build up a "sleep debt" where we lose sleep every night.

Chronic Illness Can Cause Us to Lose Sleep

Chronic illness can stress us out mentally and physically. The

medication that is prescribed to treat our illness can keep us awake as well. Mental problems, neurological disorders, thyroid disease, respiratory problems, heart disease, diabetes, musculoskeletal disorders, even heartburn can keep us awake and rob us of sleep in our body. (Help Guide.org, 2019)

People who think that their sleep is perfectly fine may find that they still have a problem with daytime sleepiness that can sometimes border on excessive. The problem may be an underlying medical issue. If there is a chronic illness involved, daytime drowsiness and insomnia could develop.

Heartburn

What you eat, especially close to bedtime, can bring on an episode of heartburn. Heavy or fatty foods, alcohol, and coffee should be avoided. Lying down can make the heartburn condition worse. The stomach acid backs up into the esophagus. Use gravity and elevate the upper body wedge blocks for under the mattress. Prescription drugs and over-the-counter medications that suppress the secretion of stomach acid can also help this condition. (Help Guide.org, 2019)

Diabetes

As you read in the last chapter, diabetes is a chronic disorder where blood sugar or glucose is elevated. Diabetics, whose levels of blood sugar are not controlled, experience sleep disturbances like night sweats, symptoms of low blood sugar (hypoglycemia), and the need to urinate frequently.

Kidney Disease

Kidneys that are damaged to the level they can no longer remove wastes, filter fluids, and keep the balance of electrolytes as they did when they were healthy. This disease causes the buildup of

waste products in the blood and can cause insomnia or RLS (restless leg syndrome). Even with dialysis or a transplant, normal sleep is still elusive, and researchers are not sure why that is. (Help Guide.org, 2019)

Heart Failure

The gradual decline in the heart being able to pump or circulate the blood sufficiently is what characterizes heart failure. Fluid builds up in the tissues and lungs and patients with this condition awaken during the night with the feeling of shortness of breath due to the accumulation of the extra body fluid around the lungs while they're lying down. Propping up the head and upper body with pillows may help the breathing. Cheyne-Stokes respiration, the breathing pattern that can awaken a person just as they are falling asleep, is a succession of deep breaths and then a brief cessation of breathing. (Help Guide.org, 2019)

Musculoskeletal Disorders

Arthritis - The pain of arthritis can make it difficult for people to fall asleep when they shift positions and resettle into sleep. Additionally, steroids used in the treatment of arthritis causes insomnia. Taking a non-steroidal anti-inflammatory (NSAID) or aspirin before bedtime will be helpful in relieving the swelling and pain in your joints during the night.

Fibromyalgia - People who suffer from this condition that is characterized by painful tendons and ligaments most likely awaken achy and stiff as someone with arthritis and with a fatigued feeling. Researchers have found that at least half of the people they analyzed with fibromyalgia have abnormal deep sleep, where slow brain waves are combined with waves usually linked with wakefulness; this is alpha-delta sleep. (Help Guide.org, 2019)

Nocturia

Nocturia is a cause of sleep loss in older adults. It is the need to awaken to urinate frequently during the night. Mild cases of nocturia will cause a person to frequent the bathroom once or twice a night. In more severe cases, a person can awaken as many as six times a night.

This condition may be a product of age. However, heart failure, diabetes, an enlarged prostate, an infection of the urinary tract, multiple sclerosis, liver failure, sleep apnea, medications (particularly diuretics), and an excessive intake of fluids post dinnertime can cause mild to severe cases of nocturia.

Therapies for Nocturia are:

- **Treatments to correct medical causes** — identify the cause and remedy it
- **Behavioral intervention** — cut down on the number of fluids prior to bedtime
- **Medication** – physician prescribes one that is approved for the treatment of an overactive bladder.

Thyroid Disease

Hyperthyroidism is an overactive thyroid and can cause difficulty sleeping. An overstimulated nervous system is disturbed by this condition and makes it hard for someone suffering from this condition to fall asleep. The condition may cause night sweats which are extremely uncomfortable and leads to arousing from sleep during the night. If the thyroid is under-active, it causes a person to feel cold and sleepy.

The thyroid affects every system and organ in the body. Symptoms of a problematic thyroid are sometimes hard to pinpoint and decipher. A blood test can be taken to check if the thyroid is functioning properly. If you are experiencing a number of symptoms

that have no explanation, consult your physician and ask for a blood test to check the thyroid. (Help Guide.org, 2019)

Breathing Problems

Changes in the muscle tone surrounding the airways cause the airways to narrow during the night and can increase the possibility of nocturnal asthma attacks causing the sleeper to abruptly awaken.

Difficulty breathing or the fear of having an asthma attack can make it harder to fall asleep. The use of steroids or other medications that assist in the breathing process has a stimulating effect quite similar to caffeine. Bronchitis and emphysema sufferer may have difficulty falling asleep and staying asleep because of the excess production of sputum, coughing, and shortness of breath. (Help Guide.org, 2019)

Medications that Affect Sleep

Beta-blockers – Can cause nightmares, insomnia, and nighttime awakening. Some beta blockers do not affect sleep.

Prescribed for: High blood pressure, heart rhythm problems, angina

Clonidine – Drowsiness during the day, fatigue, disrupted REM sleep, restlessness, nightmares, and early morning awakenings

Prescribed for: High blood pressure, alcohol withdrawal, smoking cessation, and other health problems

Corticosteroids – Jitters in the daytime, decreased REM sleep, insomnia

Prescribed for: Asthma, inflammation

Diuretics – Increased urination during the night, painful calf cramps while sleeping

Prescribed for: High blood pressure

Medications containing alcohol – Disrupted nighttime sleep, suppressed REM sleep

Prescribed for: Flu, cough, cold

Medications containing caffeine – Wakefulness lasting six to seven hours

Prescribed for: Decreased alertness

Nicotine Replacement products – Disturbing dreams, insomnia

Prescribed for: Smoking

Sedating antihistamines – Drowsiness. These medications are also found in over-the-counter sleep aids

Prescribed for: Allergy symptoms and colds

Selective serotonin re-uptake inhibitors – Daytime fatigue, decreased REM sleep

Prescribed for: Depression, anxiety

Sympathomimetic stimulants – Decreased REM and non-REM sleep, difficulty falling asleep

Prescribed for: Attention deficit disorder

Theophylline – Wakefulness similar to caffeine

Prescribed for: Asthma, chronic obstructive pulmonary disease (COPD)

Thyroid hormone – Fragmented sleep, difficulty falling asleep, and at higher doses, insomnia

Prescribed for: Hypothyroidism (Help Guide.org, 2019)

Mental Health Disorders

People who suffer from depression or anxiety have difficulty falling asleep and remaining asleep. The lack of sleep may become the focus of those who suffer from these disorders causing tension and fear furthering the loss of sleep.

General Anxiety

Feelings of worry, apprehension, or anxiety are symptoms of general anxiety disorder. The feelings are either out of proportion or intense in relation to the real problems and danger of the person's everyday life. (Help Guide.org, 2019)

People who suffer from this disorder experience extreme worry almost every day or every day for six months or more. The most common symptoms are difficulty falling asleep, remaining asleep, and an unrested feeling.

Depression

Nearly 90% of those with serious depression will probably experience insomnia. Awakening too early in the morning is a mark of depression. Some people who suffer depression have difficulty falling asleep or have a fitful sleep through the night.

In chronic dysthymia, also known as low-grade depression, sleepiness or insomnia may be the most noticeable symptom of the condition. People who are depressed enter REM sleep more quickly at the beginning of the night and spend less time in slow-wave sleep as studies have shown. (Help Guide.org, 2019)

Bipolar Disorder

Sleep that is disturbed is a noticeable feature of the bipolar disorder (also recognized as manic-depressive illness). The loss of sleep may aggravate or cause manic symptoms or may briefly alleviate depression. When someone is in a manic episode, they may not sleep for several days. These episodes are then followed by a "crash," and the person remains in bed for the next few days.

Panic Attacks and Phobias

Panic attacks frequently strike at night and psychiatrists feel that the timing of these nocturnal attacks is biologically based. Sleep-related panic attacks happen in light sleep and deep sleep which do not have psychological triggers but does not happen during dreams. (Help Guide.org, 2019)

Phobias are intense fears to a particular situation or object and infrequently causes problems with sleep, unless the phobia is related to sleep, i.e., fear of nightmares. (Help Guide.org, 2019)

Schizophrenia

People who suffer from an early, most difficult stage of a schizophrenic episode sleep very little. Their sleep patterns usually improve in between episodes, although quite a few people with schizophrenia get a normal amount of deep sleep.

Neurological disorders

There are certain nerve and brain disorders that can cause sleeplessness.

Epilepsy

People who suffer from epilepsy, a condition that produces seizures, are prone to suffer insomnia twice as likely as others. The brain disturbances causing seizures also causes insufficiencies in slow-wave sleep or REM sleep. Anti-seizure drugs cause similar

changes in the beginning, but eventually, tend to correct these sleep disturbances when used over a period of time. Approximately one in four people with epilepsy have nocturnal seizures which cause disturbed sleep and daytime sleepiness. (Help Guide.org, 2019)

Dementia

Alzheimer's disease and other types of dementia may disrupt the regulation of sleep and other functions of the brain. Disorientation, wandering, and agitation during the evening and night, called "sundowning" require constant supervision, stressing caregivers.

Headaches, Tumors, and Strokes

People who are prone to headaches need to avoid lack of sleep which can trigger headaches. Changes in the size of blood vessels leading to the brain cortex may be related to both migraines and cluster headaches. The walls of the blood vessels dilate, and the pain of a headache occurs.

Researchers often thought that when the body catches up on sleep that's been missed, its vessels are the most constricted because it is in delta sleep. When it shifts to REM sleep, the transition is more intense and could possibly induce a headache. Headaches that arouse people from sleep are often migraines. Dizziness, combined with sleepiness, weakness, vision problems, or a headache may indicate a serious difficulty such as stroke or brain tumor requiring urgent medical attention. (Help Guide.org, 2019)

Parkinson's disease

Insomnia is also experienced by people who are suffering from Parkinson's disease. It is a struggle just getting in and out of bed, and there is constant disruption of sleep. Arousals may be from

the movements and tremors that seem to come from the disorder itself. Sleepiness during the day is common.

Some drugs can make the symptoms of Parkinson's worse, so treatment with sleeping pills is problematic. Some of the drugs prescribed to patients to treat Parkinson's can cause severe nightmares while others may experience the disruption of their REM sleep. However, to maintain the freedom of movement that a patient needs to change their position in bed at night, the use of these medications at night is crucial.

Sleep deprivation without the complications of the disease can cause us to feel off-center and out of sorts. However, when chronic illness or medication is factored in, the lack of sleep is even more pronounced and can cause a chronic condition to become even worse. The sleep that's missed could actually help in the control or healing of these illnesses and conditions. Planning a sleep regimen and a review of medications with your physician can possibly assist with these problems.

8

SLEEP STUDIES AND DISORDERS

Sleep studies have helped researchers and scientists to understand what happens when we sleep, why we sleep, and the sleep disorders that unfortunately plague some people and robs them of the sleep they need to function.

In this chapter, we will cover some of the types of sleep disorders that have been identified that are linked to either lack of sleep, or the physical and psychological traits and problems of those who are stricken by them.

What is Circadian Rhythm Disorder?

It involves a person's timing when they sleep and when they are awake. The brain has a control center located inside it. In this control center, you will find the master circadian clock of the body. This is also referred to as the suprachiasmatic nucleus (SCN). The timing of temperature and hormone levels, which is also called as body rhythms, is regulated and controlled by this clock. This body clock controls the main circadian rhythm which is the sleep-wake cycle. (American Academy of Sleep Medicine, 2017)

There are five types of Circadian Sleep Disorders (CSD)

Delayed Sleep Phase Syndrome (DSPS) – If a person is unable to sleep until it is already very late and still needs to sleep in the morning or afternoon, he/she suffers from this syndrome. However, if the wake and sleep times that are appointed are much later than usual, the person is still able to sleep well. (Circadian Sleep Disorders Network, 2019)

Advanced Sleep Phase Disorder (ASPD) – The need to wake up and sleep earlier than usual is typified by this condition.

Non 24-Hour Sleep-Wake Disorder (Non-24) – If the length of a day of a person is 24 hours and more, then this condition is typified. Sleep times progress to be later and later, which makes the individual sleep at daytime until they can cycle back to begin sleeping at night. (Circadian Sleep Disorders Network, 2019)

Irregular Sleep-Wake Disorder (ISWD)

A minimum of 3 sleep periods a day by wake periods and irregular sleep characterizes this condition.

Shift Work Disorder – The circadian rhythms are disrupted when a person works during the natural sleep time of the body and there is difficulty in adjusting the required schedule. (Circadian Sleep Disorders Network, 2019)

Insomnia

According to a group of Dutch researchers, there are five different types of insomnia. This study goes beyond sub-typing and merely focusing on the type of overall symptoms that may be experienced. (Breus, Dr. Michael, 2019)

The referenced symptoms are:

- Difficulty of staying asleep
- Difficulty of falling asleep

- Waking too early

The researchers approached the study of insomnia in an entirely different way. They did not base their categorization on symptoms but based it on diverse biological traits and a person's life history. This is referred to as data-driven or bottom-up approach in scientific research. (Breus, Dr. Michael, 2019)

There were 4,300 people; of this number, 50% had a possible insomnia disorder. The statistical analysis of this group of 4,300 people revealed that there are five probable subtypes:

Sub-type 1 – (19%) The persons in this sub-type reference Highly Distressed Insomnia. They scored high on distress traits such as feeling tense, neuroticism, and felling "down."

Sub-type 2 (31%) and Sub-type 3 (15%) – These groups of people referenced Moderately Distressed Insomnia. They had less stress and distress in their lives but were either categorized as reward-sensitive (Type 2) or as reward insensitive (Type 3). What this means is that the experience of gratifying and pleasurable emotions that are tied with reward. And the other group doesn't experience pleasing or pleasurable emotions stemming from rewards.

Sub-Types 4 (20%) and Sub-Type 5 (15%) – This group was also referenced Moderately Distressed Insomnia and had less distress that sub-type 1. However, they were categorized in a different way than sub-types 2 and 3 because of the degree these two groups experienced insomnia. (Breus, Dr. Michael, 2019)

The people fitting in the Sub-Type 4 group are affected very highly by life events that are stressful, while the people of the sub-type 5 group are generally unaffected by events that would be classified as stressful.

What this study means is there isn't one solution for insomnia, because it takes on various forms. What may disturb or affect you may be very different from someone else who suffers insomnia but falls into a different sub-type of insomnia. In order to pinpoint what sub-type of insomnia you fall into, you may have to experiment with different remedies. The answer for you may come as going to therapy or taking a pill, spray, or beverage. It may require that you'll need to try more than one remedy to find what your body needs. (Breus, Dr. Michael, 2019)

There are three things to consider:

- Is the level of anxiety or stress in your daily life low, medium, or high?
- Do you derive pleasure from rewards?
- Is your sleep affected by life events?

What else can you do?

- Create and maintain a wake-up time to maintain and keep our circadian rhythm in sync. This helps to lower anxiety.
- Begin an exercise program if you don't already exercise and do so regularly. Exercise will help reduce stress and improve your sleep
- If you have problems with anxiety, avoid caffeine. Caffeine makes the feeling worse.
- Plan for those possible bad sleep nights. If there is an upcoming event that you know will create stress, expect your sleep to be impacted. Have good sleep surroundings. Possibly go to bed a little later than usual. Lack of sleep may help you fall and stay asleep.
- Take magnesium in any form. You can get it from food as

well to help calm the nerves before bedtime. (Breus, Dr. Michael, 2019)

Meditation

Meditation can also help insomnia. Its deep relaxation technique has shown to help improve sleep quality, increase sleep time, and helps make it easier to fall asleep and stay asleep. (National Sleep Foundation, 2019)

- Meditation is safe, medication-free, and all natural. This is important especially for those who don't want to ingest pills or want to cut back on their pill usage. There are no side effects. Meditation reduces measures of arousal in the brain.
- Meditation can be combined with other techniques that help to induce sleep. Cognitive behavioral therapy for insomnia (CBT-I) and mediation have helped improve sleep rather than CBT-I alone.
- The health benefits from meditation not only improve sleep quality but it can aid in reducing blood pressure as well as ease depression, anxiety, and pain.
- Meditation is not hard to do. It is accessible and easy on the budget as well. Everyone can try to meditate, regardless of age. You can pay and attend a meditation class or purchase books and CDs, or you can go online to YouTube and or download free apps to see if you like it before spending any money on it. (National Sleep Foundation, 2019)

Narcolepsy

Narcolepsy is a continuous neurological disorder which affects the ability of the brain to have the sleep-wake cycle controlled. People

who suffer from narcolepsy wake up feeling initially rested but then are sleepy over the course of the day. Many people with narcolepsy also have an uneven sleep that is interrupted and involves awakening frequently during the night. (National Institute of Neurological Disorders and Stroke, 2019)

This condition can affect daily activities. People may unwillingly doze off even if they are in the middle of activities such as eating, talking, or even driving. Symptoms include sudden muscle weakness while awake that makes a person feel unable to move (cataplexy), go limp, hallucinations or dream-like images, and total paralysis just before falling asleep or waking up.

A normal sleep cycle has a person entering rapid eye movement (REM) 60-90 minutes after falling asleep. People with narcolepsy enter REM sleep much faster, within 15 minutes of falling asleep. Additionally, muscle weakness or dream activity of REM sleep can occur before a person wakes up, or during sleep, can be absent. If left untreated or undiagnosed, narcolepsy can get in the way of social, psychological, and cognitive function development and can interfere with work, academic, and social activities.

Symptoms of Narcolepsy

Narcolepsy is a problem that lasts over a person's life, but it does not get worse with age. Symptoms can improve over time, but never quite disappear. The most common symptoms are extreme daytime sleepiness, sleep paralysis, cataplexy, and hallucinations. Although all have extreme daytime sleepiness, only 10-25% of persons who are affected during their illness will experience all of the other symptoms. (National Institute of Neurological Disorders and Stroke, 2019)

- Hallucinations
- Sleep Paralysis

- Cataplexy
- Excessive daytime sleepiness (EDS)

Sleep Walking

Sleepwalking, which was known at one time as somnambulism, is a behavior disorder that begins during deep sleep and results in performing complex behaviors or walking while sleeping. Children seem to be affected more than adults and it possibly happens if a person is sleep-deprived. The sleepwalker usually stays in a deep sleep all through the sleepwalking episode. It may be difficult to awaken the person and probably won't remember the sleepwalking episode. (Sleep Foundation.org, 2019)

Symptoms can range from walking around the room or house, sitting up in bed and looking around to walking out the door, and sometimes, even driving. The most common misunderstanding is not to wake the person whose sleepwalking. You should wake the sleepwalker because it can be dangerous not to wake them.

Sleepwalking among the general population is thought to be anywhere between 1-15%. For adults, the onset of sleepwalking is common and is not connected to any important underlying psychological or psychiatric issues. The most common causes of sleepwalking are sedative agents like alcohol, sleep deprivation, certain medications, and illnesses that produce a high fever. (Sleep Foundation.org, 2019)

The occurrence of sleepwalking among children is much higher, specifically within the ages of three to seven years of age and happens more to children with sleep apnea. Also, a higher instance of sleepwalking happens among children who have had bedwetting experiences. A related disorder is sleep terrors and both seem to run in families. (Sleep Foundation.org, 2019)

Symptoms

Sleepwalking usually occurs during deep sleep but may happen in the lighter sleep states of NREM within a few hours of falling asleep and the person who is sleepwalking during the episode may be somewhat aroused.

Additionally, other symptoms of sleepwalking are:

- A person talking during sleep
- Hardly any memory, if any of the episode
- Difficulty in awakening while the sleepwalker is experiencing an episode
- Inappropriate behavior, i.e., urinating in closets or on the floor. This is very common in children.
- Screaming (this happens together with sleep terrors)
- Violent
- Attacks on someone trying to wake them up (Sleep Foundation.org, 2019)

Sleepwalking does not have specific treatments. If you feel you're experiencing symptoms, speak with your physician or sleep specialist about how to prevent injury and to check whether there is any underlying illness.

Sleep Apnea

It is a very common sleep disorder. The condition is when a person stops breathing sporadically during sleep. This occurrence can happen from a few times per night and up to hundreds of time. The person stops breathing and is awakened from sleep as their brain is forcing them out of the deeper sleep stages, to get the body to begin to breathe again.

There are three types of sleep apnea — mixed, central, and obstructive sleep apnea.

Obstructive Sleep Apnea (OSA)

This is sleep apnea's most common type. It affects about 4% of men and 2% of women, but it is thought that only 10% of people with this condition actually get treated which leaves the majority of sufferers undiagnosed.

Symptoms

The airway's complete or partial blockage while a person is sleeping causes this. The muscles in the throat relax and the fatty tissue of the throat and/or the tongue fall back into their airway and blocks the flow of air. Air is restricted from moving past the obstruction during an apnea event and the blood flow to the brain is reduced. When this occurs, the signs to the brain awaken the person from sleep in order to get the body to breathe again. (Hines, 2018)

These episodes can happen just a few times during the night or hundreds of times depending on how severe the person's condition is and which is disruptive to a person's sleep.

Mild OSA – A person experiences 5-14 episodes of breathing interruptions in an hour

Moderate OSA – A person experiences 15-30 episodes of breathing interruptions in an hour

Severe OSA – A person experiences 30 episodes or more breathing interruptions in an hour

There are other symptoms that cause obstructive sleep apnea:

Snoring – that loud, disruptive sound that not only awakens the person who snores but their sleep partner as well.

Excessive daytime sleepiness – the sleep interruptions cause a person to miss sleep during the night (Hines, 2018)

Morning Headaches – the loss of oxygen in the bloodstream that flow to the brain

Restless sleep – People who suffer from OSA can have a fitful sleep because the mind and body are consistently awakened during the night

Irritability and Depression – The well-being and mental health of a person can become upset due to the regular lack of quality sleep. Many sufferers of OSA find themselves being irritable and short-tempered. If the lack of sleep continues, it can develop into more serious depression symptoms. (Hines, 2018)

Risks and Causes

Weight – in numerous cases, the weight of a person is directly connected to having OSA. People who are maintaining a healthy weight is less prone to having sleep apnea than those who are obese and overweight. The fatty tissues that build up in the throat and neck area are the cause of this obstruction. The respiratory system's pathway becomes narrowed and restricts airflow (Hines, 2018)

Age – Muscle tone loses as you age. This also affects the muscles in the throat that lose definition, become weak, and possibly collapse into the airway path during sleep.

Enlarged adenoids or tonsils – this is a major cause of sleep obstruction in children but can also affect adults who never had their tonsils removed when they were younger.

Natural causes – There are some people who are predisposed genetically to having a throat that is narrower or an enlarged tongue that falls back into the airway. (Hines, 2018)

Alcohol use – alcohol is a relaxant and affects the muscles of the body, including throat muscles. It may relax the throat and block the airway while sleeping.

Smoking – an unhealthy habit and a serious irritant to throat, esophagus, and lungs. The fluid retention and inflammation in the upper airways can restrict and obstruct airflow.

Treatment

PAP Therapy (Positive Airway Pressure)

- BIPAP - Bilevel Positive Airway Pressure
- APAP - Automatic Positive Airway Pressure
- CPAP - Continuous Positive Airway Pressure

Oral Appliances for Treatment

- Tongue retaining mouthpieces
- MAD – Mandibular Advancement Devices

Central Sleep Apnea (CSA)

CSA – This happens when the brain briefly fails to communicate with the muscles that control breathing. This is not like obstructive sleep apnea which is believed to be a mechanical difficulty. Central sleep apnea is more of communication difficulty. (Hines, 2018)

This condition of sleep apnea is not as common as OSA. Estimates state that about 20% of sleep apnea cases are CSA sufferers, but it is believed that the number of cases is lower according to the American Sleep Apnea Association.

Medical problems and conditions that have an effect on the brain-

stem are causes of CSA. The various causes can lead to different symptoms and varying types of CSA. (Hines, 2018)

Symptoms

- Snoring but not as much as in OSA sufferers
- Difficulty in concentrating
- Changes in mood
- Morning headache
- Poor or restless sleep
- Chronic fatigue
- Extreme daytime drowsiness
- Shortness of breath that leads to awakening
- Breathing stops or irregular breathing while sleeping (Hines, 2018)

Conditions or Causes

- Heart Failure
- Medications
- Obesity
- Parkinson's disease
- Medical conditions affecting the brain stem (including brain infection and stroke) (Hines, 2018)

Risks

- Some people with OSA can acquire CSA when they are treated with PAP (positive airway pressure) devices (Hines, 2018)
- Using opioids puts a person at greater risk
- People sleeping at a higher altitude than usual.

Symptoms usually disappear when returning to normal altitude.

- People with a brain tumor or stroke
- People with heart conditions are at greater risk
- Affects older adults over 65 years
- Men likelier to develop CSA than women

Treatment

- Treat existing medical conditions causing CSA
- **CPAP** – Continuous positive airway pressure. A CPAP device has a breathing mask that a person wears to sleep. Air pressure is delivered through the mask to a person's airways to keep tissue from collapsing causing pauses in breathing and snoring. Discontinuance of the device can have the sleep apnea condition to return.
- **BPAP** – Bilevel positive airway pressure similar to CPAP but BPAP adjusts the level of air delivered depending on the inhale and exhale of the person. Upon inhaling, an electronic sensor tells the BPAP to send air through the mask and when exhaling, the air pressure is reduced.
- **ASV** – Adaptive-servo ventilation device checks breathing and adjusts airflow appropriately through the mask and matches how someone would normally be breathing if they were awake. The adjustment is made quickly as soon as the ASV senses that the person is not breathing properly. When positive airway pressure therapy does not improve the condition, medication may be prescribed.
- A new FDA-approved therapy, Phrenic Nerve Stimulation, is delivered through a pacemaker-like device that is implanted and has the phrenic nerve send signals to the diaphragm by stimulation to control breathing.

Mixed Sleep Apnea – This is the combination of both obstructive and central sleep apnea symptoms. Some patients that are treated for obstructive sleep apnea and use the CPAP machine tend to develop symptoms of central sleep apnea during positive airway therapy. This occurrence has been noticed in sleep labs but had not been researched until 2006. Researchers from the Mayo Clinic directed a study and discovered that of a group of 223 sleep apnea patients, 15% were thought to have OSA actually had the mixed apnea condition. (Science Daily, 2006) (Hines, 2018)

Treatment

Options for the treatment of mixed sleep apnea still need to be refined. At the moment, the best treatment is CPAP devices. In some cases, when CPAP fails, BIPAP machines and adaptive-servo ventilation devices are put into play and can control ventilation better. (Hines, 2018)

However, while both BIPAP and ASV devices show that using them improves therapy over CPAP machines for mixed sleep apnea, there is still no best treatment for Mixed Sleep Apnea. (Hines, 2018)

Sleep disorders have an impact on how disruptive they can be to sleep. Without diagnosis and treatment to control or remedy these disorders, the cycle of being sleep-deprived and not getting the full benefit of what sleep can bring to your help is lost. If you suspect you or someone you know has any symptoms described in this chapter, it would be wise to consult your health professional and get tested. The continual disruption of sleep can lead to more serious sleep disorders or disease.

9

STAGES OF SLEEP CYCLE AND THE STATES OF SLEEP

When we lay down, we get into our usual comfortable sleep position, close our eyes, and drift off to sleep. Our perception of sleep is falling into a dark, mysterious realm that lasts for a period of time. What happens when we sleep is that we pass through four stages of sleep.

What are the stages of sleep?

These states are cyclical from 1 through REM. A complete sleep cycle can take about 90 to 110 minutes with each stage lasting from 5 to 15 minutes. The first cycle has a short REM sleep and deep sleep lasts longer, but as the night wears on, REM sleep lengthens and there is a decrease of deep sleep.

There are four stages of sleep. Periods of wakefulness occur before and sporadically throughout the different stages of sleep or when a person shifts their sleeping position.

When brain wave activity is at its highest and muscle tone is active, it is the period known as a wake.

Stage 1 NREM sleep - is the lightest stage and is Stage 1 of sleep. It

is defined by slow eye movements and is a drowsy stage that can be disturbed and cause someone to awaken if in this stage of sleep. The body relaxes, all the muscles are relaxed, and the activity of brain waves starts to slow from the wake period. Hypnic jerks or muscle spasms may be experienced while drifting in and out of Stage 1. (Tuck.com, 2018)

Within minutes of drifting off, alpha and theta waves are produced by the brain and eye movement slows down. Stage 1 is the stage that people are able to have a "catnap." (Sleep.org, 2019)

Stage 2 – this is NREM sleep actual first stage. Being awakened does not happen as easily as in Stage 1 sleep. There is discontinuation of slow-moving eye rolls and the continuation of brain waves slowing with specific bursts of sleep spindles combined with sleep structures known as K complexes. The K complexes and sleep spindles serve to protect the brain from awakening from sleep. The heart rate begins to slow down and the body temperature begins to decrease. (Tuck.com, 2018)

Stage 3 Deep NREM sleep – this is the stage of sleep that is the most healing and contains slow waves or delta waves. Awakening during this stage is rare and trying to awaken someone in this stage is difficult. This is the deepest stage of sleep when sleepwalking, sleep talking, or night terrors happen. (Tuck.com, 2018)

There is no muscle activity or eye movement. This is the stage that the body repairs tissues and muscles, autophagy, the repairing of damaged cells, stimulation of growth and development, immune function are boosted, and an energy build-up for the next day all happens in this stage. (Sleep.org, 2019)

REM Sleep – known as rapid eye movement, it is known as the stage where we dream. The eye movements are rapid and move side to side. The brain waves are more active than in the earlier

stages of sleep. Awakening can happen easier in REM. If awakened while in a REM period, you can feel groggy or sleepy. (Tuck.com, 2018)

You enter REM sleep approximately 90 minutes after you first fall asleep and it lasts about an hour. Five or six REM cycles every night can happen to an average adult. This is the final phase of sleep and your brain becomes more active. Along with the rapid eye movement and heightened brain activity, your heart rate and blood pressure increase, and your breathing becomes irregular, shallow, and fast. REM sleep is not just for dreaming. It's also important in learning and memory function. This is when the brain processes and consolidates information learned from the day before and then stores it in your long-term memory. (Sleep.org, 2019)

The Sleep Cycle

The progression through the stages of NREM sleep to REM sleep before beginning the entire process with NREM again is a sleep cycle. Normally, a person begins a sleep cycle every 90-110 minutes and passes through four to five cycles during the night or the hours spent sleeping. (Tuck.com, 2018)

However, a person does not go to REM sleep from deep sleep. The sleep cycle evolves through the stages of non-REM sleep from light to deep sleep. Once it completes its REM stage, it reverses back from deep sleep to light sleep and again ending with REM sleep before starting all over again.

For most people, a sleep cycle begins with Stage 1 where they spend a short period and the body starts to relax and feel drowsy. Though the possibility of being awakened is prevalent, the importance of Stage 1 is that it prepares and allows the body to enter

Stage 2, the first measurable stage of NREM sleep. (Tuck.com, 2018)

Stage 2 happens for longer periods than Stage 1. This stage sleep encompasses about 40% to 60% of total sleep during the night.

Stage 2 is found next when progressing through the sleep cycle. This is the restorative and healing stage yet does not last as long as Stage 2. For most adults, it lasts about 5% to 15% of the total sleep time during the night. Stage 3 lasts for a longer period for children and adolescents. (Tuck.com, 2018)

REM can happen any time during the sleep cycle, but it usually begins 90 minutes after you fall asleep. During the first cycle, it lasts for a short period. After the first REM, the sleep cycle begins again with Stages 1, 2, and 3 combining before progressing back to REM again for longer periods as sleep time continues.

Deep Sleep

Stage 3 of NREM sleep is where deep sleep occurs. Delta waves that happen in Stage 3 are brain waves that slowdown in speed. Stage 3 sleep is the most restorative of all the stages and the one that a person is not likely to be awakened and affected by any stimulus.

Try waking a person from a deep sleep and you'll find it can be difficult. If a person goes through a period of sleep deprivation, they will experience extreme Stage 3 sleep. There is muscle activity, and this is the stage where a person can talk or kick. Also, sleepwalking, bedwetting, and night terror occur in this stage. (Tuck.com, 2018)

The human growth hormone (HGH) is released during deep sleep and repairs the body and muscles from all the stresses of the day.

The immune system is restored. There is less known about what happens in a deep sleep than REM sleep. It is thought that the brain is also refreshed and prepared for learning new things the next day.

REM Sleep

Think of the approximate 6 to 8 hours an adult person sleeps as two halves. For most people, the first half consists of Stages 2 and 3 with intermittent periods of Stage 1 sleep and REM sleep for a short period. As the night goes on, Stage 3 begins to lessen in quantity while Stages 1 and 2 are still active with longer periods of REM happening. (Tuck.com, 2018)

There are three to five REM periods that a person usually experiences during their sleep time. The longest REM period is just before awakening. If a person wakes before that REM period is completed, they may go through a period of feeling sleepiness for several minutes or even hours later.

A person's breathing becomes more rapid, shallow, and irregular, their eyes move rapidly, and their leg muscles are briefly paralyzed during REM. Brain waves increase to the levels that a person experiences when they are awake. Blood pressure rises, the heart rate increases, the body loses the ability to regulate its temperature, and males develop erections. (Tuck.com, 2018)

REM is an active sleep state when the most vivid dreams occur. Sharp, rapid movements are how rapid eye movements happen. Brain waves are low amplitude and combined frequency consistent with Stages 2 and 3 that exhibit higher activity.

A person may experience dreams 4-6 times per night. All people do dream whether they remember them or not according to the French study. However, a person often can remember their dreams if awakened during REM sleep.

During REM sleep, muscle paralysis often occurs. Known as muscle paralysis or muscle atonia, it protects the person from acting out their dreams. The disorder that is often the worst in a REM period is Obstructive Sleep Apnea due to the absence of muscle tone that surrounds the airways. (Tuck.com, 2018)

REM and Non-REM Sleep and Brain Waves

The research of sleep is still a young field. It was not until 1953 that scientists discovered REM sleep. This occurred when new machines to monitor brain activity were developed. Before these machines were used to make this discovery, it was thought that our brain ceased activity once we went to sleep. Since that time, the idea that deprivation REM sleep could lead to insanity was disproved by scientists. What they were able to discover is that the alleviation of clinical depression is linked to the lack of REM sleep, but don't know why that happens. It is theorized recently there is a connection between REM sleep to memory and learning.

Sleep Cycle Changes with Age

From newborn through toddlers, school age and adolescents, adults to senior, sleep changes as we age. The stages of sleep and sleep cycles that have been covered in this chapter are based on adult sleep. The following are the sleep cycles of newborns to adolescence: (Tuck.com, 2018)

Newborn to 4 months – do not have distinct sleep waves and their sleep is regarded as "Active," "Quiet," and "Indeterminate." Active sleep is equal to REM sleep and quiet sleep is equal to non-REM sleep. Newborns are in active sleep most of the time and allow for frequent awakenings or arousals. Remaining in active sleep is important and necessary for regular feedings.

Infants 4 months to 1 year – A distinction is now evident in the

standard sleep stage. Sleeping routines are developed and sleep becomes more consolidated. The sleep routine is normally 10-13 hours per 24 hours with daytime naps occurring 2-3 per day.

Toddlers 1-3 years – Sleep patterns are now fully developed, and children spend time in Stage 3 deep sleep about 25% and in REM sleep at an almost equal amount. In a 24-hour period, the average sleep time is 9½-10½ hours. The nap time is reduced to 1 per day usually in the early afternoon for a short period to not impede the ability to get proper nighttime sleep.

Pre-School 3-6 years – The sleep time is about the same as a toddler where, in a 24-hour period, children in this age group sleep approximately 9-10 hours. The afternoon nap usually diminishes around the ages of 3 to 4 years old for most children. Stage 3 sleep still stays high relative to the total sleep time.

School Age 6-12 years – Sleep for this age group remains the same; in a 24-hour period, 9-10 hours and 20% to 25% of total sleep time continues to be in Stage 3 sleep. Restorative sleep for growth development is important at this age

Adolescent 12 years and beyond – Per a 24-hour period of sleep time, for this age group is approximately 9-9½ hours. There are a number of psychological changes in the circadian rhythm that happen which cause the onset of sleep to be later. One of the changes this age group goes through is puberty and once that is reached, the internal shift is the cause that many adolescents go to bed later and want to "sleep in" in the morning. The circadian rhythm shifts as a person ages and sleep regulate to about 6½ to 8 hours of sleep per 24-hour period as an adult. (Tuck.com, 2018)

The four stages of sleep are how we transit each night when we sleep. Scientists and researchers have done several studies to

unlock the mysteries of each stage, what the stages do throughout the night and what effects they have on our brain and our body.

The deepest sleep, when we are in REM, has had many theories developed about why we dream and how they manifest in our minds. There is still much to be learned about this stage. In the next chapter, we'll explore what some of the theories about dreams are and why we dream.

10

DREAMS – WHAT ARE DREAMS? WHY DO WE DREAM? DO DREAMS FORETELL THE FUTURE? (PRECOGNITIVE DREAMS)

Dreams are fascinating. You go to sleep after a busy day, lights out and begin your passage into the stages of sleep. You arrive at REM sleep where dreams reside and that's what you do — you dream.

You dream about places you've been to, or not, or are surrounded by people you know, or don't know in this strange place. A celebrity or two may pop in. You don't know them and don't have any chance in ever meeting them, but there they are, in your dreams.

Sometimes, dreams are in black and white, sometimes, in color. Many people say they don't remember their dreams. Others remember every vivid detail and almost believe they're real. There are those who write their dreams down as soon as they get up so they can remember them.

So, the question is, what are dreams?

REM sleep, the deepest stage of sleep, is where we dream. This stage occurs in intervals and makes up 20% to 25% of adult sleep. It can last from a few minutes to 30 minutes. During the night, you

cycle through REM sleep a number of times. A dream may seem fresher if you wake up in the morning during REM sleep. (Sleep-.org, 2019)

Dreams are hallucinations that happen during stages of sleep. As stated, they are strongest during REM sleep. The role of sleep regulates our blood pressure, brain function and metabolism, and other facets of our health. But as far as researchers are concerned, they find it quite difficult to explain what the role of dreams are in sleep. (Roland, 2017)

During your waking hours, you have thoughts that are logical, but when you sleep and your brain is still active, the thoughts or dreams make very little or no sense at all. It may be because the logical regions of the brain are not the area of the brain that triggers dreams, but the emotional center of the brain does.

Why do we dream?

Researchers still don't totally agree about the purpose or role of dreams. There are many theories of why we dream. Some theories are widely agreed upon and other theories are agreed upon by only a few. These are some of the theories:

Dreams as your Therapist

Your dreams may be a way of facing emotional dramas that may be happening in your life. Since the brain is at a more emotional level, your brain may be linking your feelings about a situation that your conscious mind wouldn't make. (Roland, 2017)

Dreams as Aids to your Memory

The purpose of dreams is that they aid you in storing important memories and things that you've learned. Unimportant memories are dropped from the memory and you're able to sort through complex feelings and thoughts.

Research shows that sleep helps store memories. If you learn new information, you'll recall it better than if you're asked about the information without having had the benefit of sleep. (Roland, 2017)

Dreams may help the brain store important information more efficiently while impeding stimuli that could interfere with learning and memory. However, how dreams affect memory storage isn't understood.

Fight-or-Flight Dreams

The amygdala is one of the areas of the brain most active while we dream. This area is part of the brain that's related to survival instincts and the fight-or-flight reaction.

One theory proposes that this may be the brain getting you ready to deal with real-life threats because the amygdala is more active while you sleep than when you're awake.

Fortunately, during REM sleep, the brainstem sends nerve signals that relax your muscles and prevents you from running or punching in your sleep. (Roland, 2017)

Waking Dreams linked to Sleep Paralysis

The phrase sleep paralysis sounds pretty scary. When a person experiences it for the first time, the sensation can be terrifying. Sleep paralysis is known as parasomnia, an unpleasant and unwelcome sleep phenomenon. Unpleasant and unwelcome is actually an understatement. When a person is falling asleep or awakening, this is when parasomnia typically occurs. It renders the person unable to move or speak. (Breus, Dr. Michael, 2018)

Sleep paralysis is not dangerous but can be frightening. Research shows that waking nightmares often have similar themes that happen with sleep paralysis. This condition is not uncommon.

There are varying estimates, but recent research supposes that more than 7% of the general population experiences sleep paralysis at some point in their life. Those with mental disorders have a higher risk of sleep paralysis. Research shows that 30% or more of psychiatric patients have experienced sleep paralysis as well as 35% of the people who suffer panic disorder.

Sleep paralysis experienced on isolated or occasional episodes are pretty common. If you have regular episodes of sleep paralysis or it develops significant anxiety for you and that includes having anxiety of falling asleep for fear it will happen, speak with your physician about these experiences. (Breus, Dr. Michael, 2018)

Nightmares

Dreams may seem helpful in dealing with our emotions, memories, and other information. A nightmare, thought to be a dream that's upsetting or even frightening, is also considered a dream possibly caused by anxiety, stress, or a reaction to medications. (Roland, 2017)

If you frequently have nightmares, you could have an underlying sleeping disorder. Scary dreams occurring on a regular basis can be considered a sleep disorder if the nightmares make you anxious about going to sleep, if you have recurring sleep disruptions, and they cause other psychological or sleeping issues.

Most people experience infrequent nightmares throughout their lives. However, only 5% of the population experience continuing nightmares as a sleeping disorder according to the American Sleep Association. (Roland, 2017)

How are dreams influenced?

Health Conditions

The biggest influence on dreams is whether you're sleeping too

much or not enough. Your brain becomes more active when you finally get REM sleep. If there have been a few restless nights, you're probably having more vivid dreams and you're likely to recall those dreams as well.

Pregnancy and the increased hormone productions affect the brain and how it processes emotions and thoughts. Vivid dreaming is linked to being pregnant and leads to some intense dreams.

Mood-related conditions that can trigger intense, negative, and disturbing dreams and nightmares are anxiety, depression, bipolar disorder, and other mood relations conditions. Medications that are prescribed for these conditions such as antipsychotics and antidepressants are also linked with an elevated risk of nightmares. (Roland, 2017)

Foods

There really isn't irrefutable evidence that any certain foods will create wilder or better dreams. However, it is clear that the stage may be set for your dreams to be better remembered by eating some foods.

You get quick energy from eating foods that are high in carbohydrates, but they leave you feeling down after a while. So, whatever affects you while you are awake may affect your unconscious mood when you sleep, and it may carry over into dreams. (Roland, 2017)

How to Remember Your Dreams

The brain chemical associated with your memory, norepinephrine, and the brain's electrical activity that aids in the recall are at the lowest levels when you dream and is one of the reasons dreams can be challenging to remember. You won't be

able to remember a dream if you don't wake up during a dream. The dreams that are remembered are the ones that are continuing when you awaken.

There are two ways to be able to recall your dreams. One is telling yourself that you want to remember your dream and do this just as you're falling asleep. The likelihood that your last thought will have you waking up with a dream still fairly fresh in your memory.

The second way to recall your dream is as soon as you awaken, don't become distracted, get out of bed, or think about anything else. Concentrate and try to comprehend what memories or images you have of your dream and write them down on a pad or smartphone next to your bed. (Roland, 2017)

Do Dreams Predict the Future?

Dreams are like some magical occurrences that come on a nightly basis. As we've read about some of the theories that researchers have surmised as what dreams may mean, there is still no definitive reason as to why we dream. (Loewen, 2018)

There is no scientific explanation that completely makes clear the process through which they occur. As for us, we wake up from a dream and wonder what it was about and why did you dream it in the first place.

This clears the path for many more exciting and idealist explanations for the reason's dreams exist and what role they have in our lives. One most popular theory is that dreams may foretell the future. (Loewen, 2018)

This theory is, of course, buoyed by numerous stories of people who predict disasters or even their own deaths and a lot of circumstantial evidence. Almost all of us have some déjà vu experience or know someone who, based on their dream, made a premonition.

Actually, there seems to suggest this is likely possible according to some studies.

We know that dreams happen in the deepest of sleep, REM sleep. Although, it has been discovered that dreaming occurs in other stages of sleep and we know that currently, science has no definite explanation on how dreams work. (Loewen, 2018)

However, the understanding of what happens is the widely accepted explanation that dreams are caused by pons randomly firing mostly during REM sleep. Pons is the part of the brainstem that connects the thalamus and the medulla oblongata. The pons is like a relay station that carries information from the cerebral cortex to the cerebellum, and when they fire, it results in the brain receiving sensory input. The input is thought that the brain interprets in a way to form a narrative as the brain tends to naturally form images and narratives out of information that is jumbled. This is known as 'activation-synthesis theory.' (Loewen, 2018)

The problem with this theory is that it doesn't seem to explain why dreams frequently have contents that seem to be what's on our minds and reflect our daily lives. Since we usually dream and they have people we know, images of popular culture and places we've been, there is little in terms of evidence for this theory and doesn't make sense intuitively because most of our short term memories have been converted to long term before we fall asleep.

There are many other theories to the idea that dreams may foretell the future, the most famous in dream interpretation is by Freud and his most famous book "The Interpretation of Dreams." Freud looked at dream as the 'royal road' to the unconscious, a time when our conscious ego is not on guard and the repressed and forgotten jumble of information in the unconscious brain 'leaks' into our awareness and thoughts. Freud believed that understanding the content of the unconscious mind by interpreting our

dreams could address psychological issues that may be experiencing. He also believed that dreams denoted unconscious desires. (Loewen, 2018)

The explanation for precognitive dreams, what they are, and what they mean is probably a mixture of firings, of desires, memories, and the brain trying to create stories. However, there is no explanation of how dreams may predict the future and none of these theories hold an explicit explanation.

Scientists and researchers admit that the theories of dreams, why and how they happen, and their interpretations are not conclusive. The mixture of all the theories is what stands today for the reasons we dream. This realm of sleep will be continued to be studied, but it is thought that having one concrete, definitive theory for the role of why we dream is yet to come.

CONCLUSION

Thank you for reading *Why We Sleep: Powerful Secrets of Better Health.* Hopefully, it was informative and provided all the information you need to understand the mysteries and the healthfulness of getting quality sleep.

Although you've completed reading this book, there is still more to learn about this topic. Sleep is as important as having air to breathe, food to eat, and water to drink to sustain our survival. Learning on how much it is needed in our daily life and how it connects with our physical and mental well-being is astounding.

Reading this book will enlighten you to the many facets that make up sleep, both good and bad. It is what we need to know to attain and support healthful sleep and realize that the lack of sleep can create physical issues that are unwanted and may need a physician's attention.

The next step is to take stock of your sleep surroundings for yourself and your family. Pay attention to your children's sleep habits and instill a healthy sleep routine for them now so they can carry it with them in later years.

It's not fun feeling tired without a good night's sleep. It can affect your work, relationships, and even the way you drive. Take heed and pay close attention to the results of a bad night's sleep.

Use the information found in this book to create a master plan on taking care of yourself and your family to get the most out of a good night's sleep.

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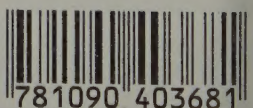

WHY WE SLEEP AND DREAM

Powerful Secrets of Better Health

If you want to know more about sleep, its mystery, the why we sleep, and how it is as important for our survival and health as air, food, and water, then this book Why We Sleep and Dream: Powerful Secrets of Better Health is a must read!

Sleep is a mystery and there are many theories as to what sleep is and why we sleep. It's almost mystical how sleep creeps up on you. You wake up and begin your busy day, performing the daily tasks that you carry out each day; traveling to work or school, catching the train or bus to a second job, get the kids to and after school activities, cook dinner, sit and read the latest news, study for class the next day, go online and surf the web, or watch TV for a couple of hours. You regroup after the day, and suddenly, you get the usual feeling of drowsiness that is the first indication that you're getting sleepy and bedtime is not far behind.

What many people don't realize is that the sleep you get each night, while it works to make you feel refreshed and revitalized to meet the world the next day, is really a busy time for your brain, your body, and all the hormones and cells to do their job so that you awaken not just ready to rock and start another busy day, but it's also a healthier you that you'll see when you look in the mirror the next morning.

This book will give you the information you need to understand how important sleep is for you, your family, and everyone around you. It will also break down what happens when you are sleep-deprived and how it can negatively affect you physically and psychologically, not to mention how diseases can develop or be exacerbated without getting the appropriate sleep.

Sleep is an important element of life that needs to be given more attention and not be taken for granted. There is much more informa f sleep:

- What sleep is and the reasons
- What things affect our sleep n can do to combat sleep deprivation
- A special note to parents of ne get some sleep and still be attentive parents to their newe y
- What are the benefits of a goo it affects our health in a very positive way
- Are you sleeping the right number of hours for your age? How about children and adolescents – how much sleep should they be getting?
- How the lack of sleep is detrimental to your body, and how much you lose if your lack of sleep is chronic
- How the lack of sleep can create emotional issues and how sleep disorders can also cause sleep deprivation
- What are dreams and why we dream and the theories that scientists and researchers admit don't tell the whole story
- And more....

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